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STATIC STABILITY AND CONTROL
EFFECTIVENESS OF MODELS 12-0 AND 34-0
OF THE VEHICLE 3 CONFIGURATION

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STATIC STABILITY AND CONTROL
EFFECTIVENESS OF MODELS 12-0 AND 34-0
OF THE VEHICLE 3 CONFIGURATION

By

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STATIC STABILITY AND CONTROL
EFFECTIVENESS OF MODELS 12-0 AND 34-0
OF THE VEHICLE 3 CONFIGURATION

By

E. C. Allen* and T. Tuttle*

ABSTRACT

This report presents static stability and control effectiveness characteristics of two 0.004 scale models of the vehicle 3 configuration. The models have been designated 12-0 and 34-0, but are referred to as 139B and 139 respectively in this report. The components investigated consisted of a single aft body, vertical/rudder, OMS pods with two interchangeable wings, four interchangeable forward bodies, four trimmers, and a spoiler.

The test was conducted in the NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel over a Mach number range from 0.6 to 4.96. Angles of attack from 0 to 60 degrees and angles of sideslip from -10 to 10 degrees at 0, 10, 20, 30, and 40 degrees angle of attack were tested. Elevon, body flap, and speed brake deflection composed the parametric considerations. No grit was placed on the models during the test.

This document has been divided into three volumes. Volume I contains most of the longitudinal data. Volume II presents the lateral-directional characteristics and some additional longitudinal data. The tabulated source data and incremental data figures are presented in Volume III.

* Rockwell International

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- (A): CIAFO, CIMAFO, CIMCLO, CLALFA, CDAFO, CDFAFO, L/D_{MAX},
ALFLDM vs. Mach
- (B): CL, CN, CLM, XCP/L vs. ALPHA: CL, CN vs. CLM; CD, CDF, CA,
CAF, CAB, L/D vs. ALPHA; CL vs. CD
- (C): CLM vs. ALPHA
- (D): CY, CYN, CBL vs. BETA
- (E): CYBETA, CYNBET, CBLBET vs. ALPHA
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- (G): DCL, DCD, DCN, DCA, DCAB, DCLM vs. ALPHA
- (H): DCL, DCD, DCN, DCA, DCLM vs. DBF

NOMENCLATURE
General

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C _p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m ² , psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m ² , psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m ³ , slugs/ft ³
<u>Reference & C.G. Definitions</u>		
A _b		base area; m ² , ft ²
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
$\frac{l_{REF}}{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m ² , ft ²
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis
<u>SUBSCRIPTS</u>		
b		base
l		local
s		static conditions
t		total conditions
∞		free stream

NOMENCLATURE (Continued)

Body-Axis System

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $-(CPBAVG) \frac{A_b - A_c}{S_{ref}} - (CPC) \frac{A_c}{S_{ref}}$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CTL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

Stability-Axis System

C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
L/D	L/D	lift-to-drag ratio; C_L/C_D

NOMENCLATURE (CONTINUED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
δ_{BF}	BDFLAP	body flap, surface deflection angle, positive deflection, trailing edge down; degrees.
δ_e	ELEVTR	elevator, surface deflection angle, positive deflection, trailing edge down; degrees.
δ_{SB}	SPDBRK	speed brake, split rudder inclusive deflection angle between outer surface, left split rudder trailing edge left and right split rudder trailing edge right, $\delta_{rf} = (\delta_{rL} + \delta_{rR})/2$, positive deflection; degrees. SPDBRK = 999.99, basic setting. See Dataset Collation Sheets.
δ_s	SPOILR	spoiler, surface deflection angle, positive deflection, trailing edge down; degrees.
$C_{L\alpha}$	CLALFA	derivative of lift coefficient with respect to alpha, (alpha = $\pm 5^\circ$); per degree.
$C_{y\beta}$	CYBETA	derivative of side force coefficient with respect to beta (beta = $\pm 5^\circ$); per degree.
$C_{n\beta}$	CYNBET	derivative of yawing moment coefficient with respect to beta (beta = $\pm 5^\circ$); per degree, body axis system.
$C_{l\beta}$	CBLBET	derivative of rolling moment coefficient with respect to beta (beta = $\pm 5^\circ$); per degree, body axis system.
a.c.	XCP/L	local longitudinal aerodynamic center based on body length; moment reference point minus the local longitudinal static stability derivative; $XCP/L = \left[(XMRP/LBody) - (CIM/CN)(LREF/LBody) \right];$ body axis.
$C_{D\alpha=0}$	CDAFO	drag coefficient at zero angle of attack (alpha = 0).
$C_{DF\alpha=0}$	CDFAFO	forebody drag coefficient at zero angle of attack (alpha = 0).

NOMENCLATURE (CONTINUED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$C_{L\alpha = 0}$	CLAFO	lift coefficient at zero angle of attack (alpha = 0).
$C_{m\alpha = 0}$	CIMAFO	pitching moment coefficient at zero angle of attack (alpha = 0).
$C_m(C_L = 0)$	CIMCLO	pitching moment coefficient at zero lift coefficient (CL = 0).
L/D_{\max}	L/DMAX	maximum lift-drag ratio.
$\alpha_{(L/D_{\max})}$	ALFLDM	angle of attack at maximum lift-drag ratio; degrees.
ΔC_A	DCA	incremental axial force coefficient, algebraic difference of two runs.
ΔC_{A_B}	DCAB	incremental base axial force coefficient, algebraic difference of two runs.
ΔC_{A_F}	DCAF	incremental forebody axial force coefficient, algebraic difference of two runs.
ΔC_D	DCD	incremental drag coefficient, algebraic difference of two runs.
ΔC_{D_F}	DCDF	incremental forebody drag coefficient; algebraic difference of two runs.
ΔC_L	DCL	incremental lift coefficient, algebraic difference of two runs.
ΔC_m	DCIM	incremental pitching moment coefficient, algebraic difference of two runs.
ΔC_N	DCN	incremental normal force coefficient, algebraic difference of two runs.
$\Delta \delta_{BF}$	DBF	incremental body flap, incremental difference be- tween two runs, surface deflection angle, positive deflection, trailing edge down; degrees.

NOMENCLATURE (CONCLUDED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$\Delta\delta_e$	DE	incremental elevon, algebraic difference of two runs, surface deflection angle, positive deflection, trailing edge down; degrees.
$\Delta\delta_s$	DS	incremental spoiler, incremental difference between two runs, surface deflection angle, positive deflection, trailing edge down; degrees.

MODEL DESCRIPTION

The model geometry (0.004-scale) is shown in figure 2. The model was constructed using aluminum for the wing and stainless steel for the body, elevons, fins, speed brakes, and trimmers. The capability to obtain wing-body-tail, wing-body and body-alone data was provided. In addition, the model had deflected elevons, speed brakes, and body flap for the following combinations:

$$\delta_e = 0, +15^\circ, -20^\circ, -40^\circ \text{ (elevon)}$$

$$\delta_{SB} = 0, 24.92^\circ, 54.92^\circ \text{ (speed brake)}$$

$$\delta_{BF} = 0, 13.75^\circ, -14.25^\circ \text{ (body flap, basic)}$$

$$\delta_{BF} = 0, 13.75^\circ, -22.75^\circ \text{ (body flap, large area)}$$

Deflection angles were obtained by replacing the control surface with a separate surface set to the desired angle.

The model assembly had the following components:

Aft body - stainless steel

Vertical - stainless steel

Speed brakes - stainless steel

OMS pods - stycast

Forward body (4 interchangeable) - stainless steel

1 - per VL70-000139

1 - per VL70-000139, alternate cambered

1 - per VL70-000139B

1 - per VL70-000139B, alternate cambered

Wing and elevons (2 interchangeable) - aluminum

1 - per VL70-000139

1 - per VL70-000139B

Trimmers - four trimmers were tested with the VL70-000139 forward body (see Table IV).

Spoiler - one set of spoilers was tested with the VL70-000139 model configuration, (see sketch, Figure 4).

The model-balance combination was mounted to the tunnel pitch sector using the MSFC double knuckle sting numbers 1 and 3. The alpha and beta schedules noted in Table II required the following sting settings:

MSFC DOUBLE KNUCKLE STING NUMBER 1

α Range (deg)	Offset (deg)	Sting Adapter		Balance Adapter	
		No.	Hole	No.	Hole
A 0 to 20	10	1	53	2	9
B 5 to 25	15	1	53	2	10
H - 10 to 10	0	1	53	113	1
A 0 to 20	10	1	53	113	2
E 20 to 40	30	1	54	113	5
K 40 to 60	50	1	51	1	4

MSFC DOUBLE KNUCKLE STING NUMBER 3

α Range (deg)	Offset (deg)	Sting Adapter		Balance Adapter	
		No.	Hole	No.	Hole
A 0 to 20	10	3	61	3	23

Pressure transducers were used to measure base pressures. Two base pressure tubes and one cavity pressure tube were used. The base pressure tubes were "teed" together. The base and cavity areas are shown in figure 3 along with the base pressure tube locations.

CONFIGURATIONS INVESTIGATED

Configurations investigated consisted of the 0.004 scale models 34-0 and 12-0 (139 and 139B) with and without an alternate cambered forebody.

The model components are:

<u>Symbol</u>		<u>Definition</u>
34-0 (139) Model	12-0 (139B) Model	
B17	B19	orbiter body, basic
B20	B21	orbiter body, alternate cambered
C7	C7	canopy, basic
R5	R5	rudder
V7	V7	vertical tail
W103	W107	wing, basic
W109	W110	wing, alternate for cambered forebody
W105		wing, 500 in. glove radius
F5	F5	body flap
F6	F6	body flap, large area
E22	E23	elevon
M4	M4	OMS pods
H19	H19	trimmer, glove apex (20°)
H20	H20	trimmer, glove apex (10°)
H22	H22	trimmer, cabin (40°)
H23	H23	trimmer, nose (40°)
Z1	Z1	spoiler

CONFIGURATIONS INVESTIGATED
(Continued)

A complete description of these model components is given in Table III entitled Dimensional Data. A description of the test conditions (angles of attack and parametric considerations) to which each model configuration was subjected is contained in Table II entitled Data Set Collations.

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F. The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^\circ$). Sting offsets are available for obtaining various maximum angles of attack up to 90°.

DATA REDUCTION

All model forces and moments were resolved in the body and stability axis systems and are presented in the form of non-dimensional coefficients. The balance centerline is 0.020 inches above the MRP (see Figure 2) and was corrected for pitching and rolling moment.

Two base pressures and one cavity pressure were recorded. The base and cavity areas are shown in Figure 3, along with the base pressure tube locations. Equations used in base pressure coefficient calculations are:

$$C_A = C_{AF} - (C_{PBAVG}) \frac{A_b}{S_{ref}}$$

$$C_{AB} = -(C_{PBAVG}) \frac{A_b - A_c}{S_{ref}} - (C_{PC}) \frac{A_c}{S_{ref}}$$

$$C_{PBAVG} = \text{average base pressure coefficient} = \frac{P_{bavg} - P_{\infty}}{q}$$

$$C_{PC} = \text{cavity pressure coefficient} = \frac{P_c - P_{\infty}}{q}$$

Reference dimensions utilized in the reduction of the non-dimensional coefficients are:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
REFERENCE AREA (S_{ref})	2690.0 ft. ²	6.198 in. ²
REFERENCE LENGTH (l_{ref}) (M.A.C)	474.8 in.	1.899 in.
REFERENCE SPAN (b_{ref}) (WING SPAN)	936.7 in.	3.747 in.
MOMENT REFERENCE CENTER (MRP) (From Nose)	838.7 in.	3.355 in.

DATA REDUCTION (Concluded)

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
BODY LENGTH (ℓ_b)	1290.3 in.	5.161 in.
BASE AREA (A_b) (See Fig 2)	434.2 ft. ²	1.0004 in. ²
CAVITY AREA (A_c)	137.5 ft. ²	0.3167 in. ²

Data were corrected for weight tares and sting deflections.

Axial-force and drag coefficients for Mach numbers less than 1.96 for the following datasets (tunnel runs 256 thru 267) are not included in the plotted data and the tabulated listing. This data was judged to be erroneous:

R87048

R87049

R87058

R87066

R87067

R87075 (M = 1.2 only)

TEST : MSFC TWT 574

TABLE I.

DATE : MAY-JUN 73

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	$4.6 \times 10^6/\text{ft.}$	4.35	100
0.9	$5.9 \times 10^6/\text{ft.}$	7.35	100
1.2	$6.1 \times 10^6/\text{ft.}$	9.12	100
1.96	$6.8 \times 10^6/\text{ft.}$	10.22	100
2.99	$4.1 \times 10^6/\text{ft.}$	5.20	140
4.96	$4.9 \times 10^6/\text{ft.}$	3.07	140

BALANCE UTILIZED: MSFC No. 231 Six Component

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	<u>122 lbs.</u>	<u>$\pm .61$</u>	<u>$\pm .0082$</u>
SF	<u>52 lbs.</u>	<u>$\pm .26$</u>	<u>$\pm .0035$</u>
AF	<u>22 lbs.</u>	<u>$\pm .10$</u>	<u>$\pm .0013$</u>
PM	<u>122 in-lbs.</u>	<u>$\pm .61$</u>	<u>$\pm .0015$</u>
RM	<u>30 in-lbs.</u>	<u>$\pm .15$</u>	<u>$\pm .0004$</u>
YM	<u>53 in-lbs.</u>	<u>$\pm .27$</u>	<u>$\pm .0007$</u>

COMMENTS:

TABLE II.

Sheet 1 of 7

TEST: $\Phi A - 48$ MSFC 574		DATA SET / RUN NUMBER COLLATION SUMMARY																		DATE :																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES						CAL.		MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		α	β	δ_{EL}	δ_{ER}	δ_{EF}	δ_{SB}	δ_{SIC}	ADPT.	#2	#2	#113	#113																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

CM I GEM I CY I SYN I CBL I CA I CAB I CL I CD I 4/P I

α OR β SCHEDULES A) $0^\circ \rightarrow 20^\circ (\Delta\alpha = 2^\circ)$ E) $20^\circ \rightarrow 40^\circ (\Delta\alpha = 2^\circ)$ K) $40^\circ \rightarrow 60^\circ (\Delta\alpha = 2^\circ)$
 B) $5^\circ \rightarrow 25^\circ (\Delta\alpha = 2^\circ)$ G) $-10^\circ \rightarrow 10^\circ (\Delta\beta = 2^\circ)$ H) $-10^\circ \rightarrow 10^\circ (\Delta\alpha = 2^\circ)$

* BASIC SPEED BRAKE DEFLECTION (δ_{SB}) IS DEFINED AS A DEFLECTION OF 24.92 FOR $M_N = .6$ AND .9 AND 54.92 AT ALL M_N OTHER THAN .6 AND .9.

sheet 2 of 7

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE:

24

TABLE II. (Continued)

sheet 3 of 7

TEST: $\phi A-48$ MSFC 574										DATA SET/RUN NUMBER COLLATION SUMMARY										DATE :																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES					BAL.		MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		α	β	δ_{EL}	δ_{ER}	δ_{BF}	δ_{SB}	δ_{STC}	ADPT.			0.6	0.9	1.2	1.96	2.99	4.96																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

TABLE II. (Continued)

sheet 4 of 7

TEST: 0A-48 MSEC 574		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE:									
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				BAL. ADPT.	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)												
		α	β	δ_{eL}	δ_{eR}	δ_{AB}	δ_{AB}^{*510}		0.6	0.9	1.2	1.96	2.99	4.96							
R87059	ORBITER 139	E	0	0	0	0	-14.25														
60		A	0	15	15	13.75						276	277	278	187	208	209				
61		E	0	15	15	13.75										211	210				
62		A	0	-20	-20	0						287	286	285	188	192	193				
63		E	0	-20	-20	0										195	194				
64		A	0	-40	-40	-14.25									184	219	218				
65		E	0	-40	-40	-14.25										216	217				
66	ORB 139 W/ALT NOSE	A	0	0	0	0	0					261	260	259	178	204	205				
67		E	0	0	0	0	0					262				199	198				
68		0	G	0	0	0	0								174	250	251				
69		10	G	0	0	0	0								177	253	252				
70		20	G	0	0	0	0								173	244	245				
71		30	G	0	0	0	0									239	238				
72		40	G	0	0	0	0										246				
73		A	0	0	0	13.75						270	271	272	181	236	237				
74		E	0	0	0	13.75										231	230				
75		A	0	0	0	-14.25						269	268	267	182	223	222				
76		E	0	0	0	-14.25										228	229				

COEFFICIENTS		IDVAR (1)										IDVAR (2)										NDV
α OR β	SCHEDULES	1	7	13	19	25	31	37	43	49	55	61	67	75	76							

Sheet 5 of 7

[illegible]

Sheet 6 of 7

DATA SET/RUN NUMBER COLLATION SUMMARY

TEST: $\phi A-48$ MSFC 574

[illegible]

Sheet 7 of 7

DATE:

29

TABLE III. DIMENSIONAL DATA

MODEL COMPONENT: BODY B17GENERAL DESCRIPTION: Fuselage, 3 configuration, lightweight
orbiter per Rockwell Lines VL70-000139Model Scale = 0.004

DRAWING NUMBER

VL70-000139DIMENSION:FULL SCALEMODEL SCALE

Length ~ IN.

1290.35.16120

Max Width ~ IN.

267.61.07040

Max Depth ~ IN.

244.50.9780

Fineness Ratio

4.821754.82175Area ~ Ft²

Max Cross-Sectional

386.670.00619

Planform

Wetted

Base

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B19GENERAL DESCRIPTION: Fuselage, 3 configuration, Lightweight
Orbiter per VL70-000139BNOTE: Identical to B17 except forebodyModel Scale = 0.004

DRAWING NUMBER

VL70-000139BDIMENSION:FULL SCALEMODEL SCALE

Length ~ IN.

1290.35.16120

Max Width ~ IN.

267.61.07040

Max Depth ~ IN.

244.50.9780

Fineness Ratio

4.821754.82175Area ~ Ft²

Max Cross-Sectional

386.670.00619

Planform

Wetted

Base

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B20GENERAL DESCRIPTION: Fuselage, 3 configuration, Lightweight
Orbiter per Alt. Cambered Forebody for VL70-000139. Note:B20 Identical to B17 except forebody.Model Scale = .004.

DRAWING NUMBER	Alt. Cambered Forebody Per VL70-000139	
<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B21GENERAL DESCRIPTION: Fuselage, 3 Configuration, Lightweight
Orbiter Per Alt. Cambered Forebody for VL70-000139B.NOTE: B21 Identical to B19 Except Forebody.Model Scale = .004DRAWING NUMBER Alt. Cambered
Forebody For
VL70-000139B

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft. ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Canopy - C7GENERAL DESCRIPTION: Configuration 3 per Rockwell LinesVL 70-000139Model Scale = .004DRAWING NUMBER VL70-000139

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ($x_o = 433$ to $x_o = 670$) in.FS	<u>237</u>	<u>0.9480</u>
Max Width	<u> </u>	<u> </u>
Max Depth ($y_o =$ to $y_o = 501$) in.FS	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area	<u> </u>	<u> </u>
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: R5 - RudderGENERAL DESCRIPTION: 2A and 3 configuration per Rockwell linesVL70-000095 and VL70-000139Scale Model = .004DRAWING NUMBER: VL70-000139
VL70-000095

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ Ft ²	<u>106.38</u>	<u>0.00170</u>
Span (equivalent) ~ IN.	<u>201.0</u>	<u>0.8040</u>
Inb'd equivalent chord	<u>91.585</u>	<u>0.36634</u>
Outb'd equivalent chord	<u>50.833</u>	<u>0.20333</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Tailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (Normal to hinge line) Ft ³	<u>526.13</u>	<u>0.00003</u>
Product of area and mean chord		

TABLE III. (CONTINUED)

MODEL COMPONENT: VERTICAL - V 7 (Lightweight orbiter configuration)GENERAL DESCRIPTION: Centerline vertical tail, double wedge airfoil
with rounded leading edge

Scale Model = .004

DRAWING NUMBER: VL70-0000139
VL70-000095

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area (Theo) ~ Ft ²	425.92	0.00682
Planform		
Span (Theo) ~ In.	315.72	1.26288
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	.404	.404
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	26.249	26.249
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.50	1.0740
Tip (Theo) WP	108.47	0.43388
MAC	199.81	0.79924
Fus. Sta. of .25 MAC	1463.50	5.8540
W. P. of .25 MAC	635.522	2.542088
B. L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle Deg	10.000	10.000
Trailing Wedge Angle Deg	14.920	14.920
Leading Edge Radius ~ IN.	2.00	0.0080
Void Area	13.17	0.00021
Blanketed Area		

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W103 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 configuration per lines VL70-000139NOTE: (Dihedral angle is defined at the lower surface of the wing at the 75.33% element line projected into a plane perpendicularto the FRLScale Model = 0.004TEST NO.DWG. NO. VL70-000139DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft^2

Planform

2690.00

0.04304

Span (Theo In.

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

3.000

3.000

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

4.54756

W.P. of .25 MAC

1.19680

B.L. of .25 MAC

0.72852

EXPOSED DATAArea (Theo) Ft^2

1752.29

0.02804

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.2496

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20080

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)

XXXX-64

Root $\frac{b}{2} =$

.10

.10

Tip $\frac{b}{2} =$

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft^2

120.33

0.00192

Leading Edge Intersects Fus M. L. @ Sta

560.0

2.240

Leading Edge Intersects Wing @ Sta

1035.0

4.140

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 107 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 configuration per lines VL70-000139B.NOTE: Same as W103 except cuff, airfoil, and angle of incidenceScale Model = 0.004

TEST NO.	DWG. NO. VL70-000139	
DIMENSIONS:	FULL-SCALE	MODEL SCALE
<u>TOTAL DATA</u>		
Area (Theo.) Ft^2		
Planform	2690.00	0.04304
Span (Theo In.)	936.68	3.74672
Aspect Ratio	2.265	2.265
Rate of Taper	1.177	1.177
Taper Ratio	0.200	0.200
Dihedral Angle, degrees	3.500	3.500
Incidence Angle, degrees	0.500	0.500
Aerodynamic Twist, degrees	+3.000	+3.000
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.24	-10.24
0.25 Element Line	35.209	35.209
Chords:		
Root (Theo) B.P.O.O.	689.24	2.75696
Tip, (Theo) B.P.	137.85	0.55140
MAC	474.81	1.89924
Fus. Sta. of .25 MAC	1136.89	4.54756
W.P. of .25 MAC	299.20	1.19680
B.L. of .25 MAC	182.13	0.72852
<u>EXPOSED DATA</u>		
Area (Theo) Ft^2	1752.29	0.02804
Span, (Theo) In. BP108	720.68	2.88272
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
Chords		
Root BP108	562.40	2.2496
Tip $1.00 \frac{b}{2}$	137.85	0.55140
MAC	393.03	1.57212
Fus. Sta. of .25 MAC	1185.31	4.74124
W.P. of .25 MAC	300.20	1.20080
B.L. of .25 MAC	251.76	1.00704
Airfoil Section (Rockwell Mod NASA)		
XXXX-64		
Root $\frac{b}{2}$ =	.10	.10
Tip $\frac{b}{2}$ =	.12	.12
Data for (1) of (2) Sides		
Leading Edge Cuff		
Planform Area Ft^2	118.333	0.00189
Leading Edge Intersects Fus M. L. @ Sta	500	2.0
Leading Edge Intersects Wing @ Sta	1083.4	4.3336

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 109 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter, configuration per lines Altn. CamberedForebody for VL70-000139 NOTE: Dihedral Angle is definedat the lower surface of the wing at the 75.33% element lineprojected into a plane perpendicular to the FRIScale Model = .004TEST NO. Altn. Cambered Forebod:
DWG. NO. For VL70-000139DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft^2

Planform

2690.00

0.04304

Span (Theo In.

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

3.000

3.000

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

1136.89

4.54756

W.P. of .25 MAC

299.20

1.19680

B.L. of .25 MAC

182.13

0.72852

EXPOSED DATAArea (Theo) Ft^2

1752.29

0.02804

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.2496

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20080

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)

XXXX-64

Root $\frac{b}{2}$ =

.10

.10

Tip $\frac{b}{2}$ =

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff Ft^2

120.33

0.00192

Planform Area

560.0

2.240

Leading Edge Intersects Fus M. L. @ Sta

1035.0

4.140

Leading Edge Intersects Wing @ Sta

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 110 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 configuration per lines for VL70-000139BAltn. Cambered ForebodyNOTE: Same as W103 except Cuff, Airfoil, and Angle of IncidenceScale Model = 0.004

TEST NO.	DWG. NO.	Altn. Cambered Forebo For VL70-000139B
----------	----------	---

DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft^2

Planform

2690.00

0.04304

Span (Theo In.

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

0.500

0.500

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

1136.89

4.54756

W.P. of .25 MAC

299.20

1.19680

B.L. of .25 MAC

182.13

0.72852

EXPOSED DATAArea (Theo) Ft^2

1752.29

0.02804

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.2496

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20080

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)
XXXX-64Root $\frac{b}{2}$ =

.10

.10

Tip $\frac{b}{2}$ =

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff $\frac{2}{2}$

118.333

0.00189

Planform Area Ft^2

500

2.0

Leading Edge Intersects Fus M. L. @ Sta

1083.4

4.3336

Leading Edge Intersects Wing @ Sta

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 105 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 Configuration per lines VL70-000139NOTE: W105 identical to W103 except 500 in. radius used to
connect cuff to wing.

Scale model = 0.004

TEST NO.DWG. NO. VL70-000139 MODDIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo) Ft^2

Planform

2690.00

0.04304

Span (Theo) In.

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

3.000

3.000

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

1136.89

4.54756

W.P. of .25 MAC

299.20

1.19680

B.L. of .25 MAC

182.13

0.72852

EXPOSED DATAArea (Theo) Ft^2

1752.29

7.00916

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.24960

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20008

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)

XXXX-64

Root $\frac{b}{2} =$

.10

.10

Tip $\frac{b}{2} =$

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff Ft^2

122.67

0.00196

Planform Area

569.50

2.2780

Leading Edge Intersects Fus M. L. @ Sta

1135.4

4.54160

Leading Edge Intersects Wing @ Sta

TABLE III. (CONTINUED)

MODEL COMPONENT: F5 Body FlapGENERAL DESCRIPTION: 3 configuration per Rockwell linesVL70-000139Scale Model = 0.004

DRAWING NUMBER

VL70-000139DIMENSION:FULL SCALEMODEL SCALE

Length ~ IN.

84.700.33880

Max Width ~ IN.

267.61.07040

Max Depth

Fineness Ratio

Area ~ Ft²

Max Cross-Sectional

Planform

Wetted

Base

142.51950.0022838.09580.15238

TABLE III. (CONTINUED)

MODEL COMPONENT: Body Flap - F₆GENERAL DESCRIPTION: Body Flap for configuration 3,
per lines VL70-000139BNOTE: Flap adjustable from -32.5° to $+13.75^{\circ}$

MODEL SCALE = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>107.0</u>	<u>0.4280</u>
Max Width ~ in.	<u>267.6</u>	<u>1.0704</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft ²		
Max Cross-Sectional	_____	_____
Planform	<u>174.55</u>	<u>0.00279</u>
Wetted	_____	_____
Base	<u>38.0958</u>	<u>0.00061</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Elevon E-22GENERAL DESCRIPTION: 3 configuration per W103 Rockwell linesVL70-000139 data for (1) of (2) sidesScale Model = 0.004DRAWING NUMBER: VL70-000139

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ FT ²	<u>205.52</u>	<u>0.00329</u>
Span (equivalent) IN.	<u>353.34</u>	<u>1.41336</u>
Inb'd equivalent chord	<u>114.78</u>	<u>0.45912</u>
Outb'd equivalent chord	<u>55.00</u>	<u>0.220</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>.208</u>	<u>.208</u>
At Outb'd equiv. chord	<u>.400</u>	<u>.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>-10.24</u>	<u>-10.24</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) FT ³	<u>1548.07</u>	<u>0.00010</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Elevon E-23GENERAL DESCRIPTION: 3 configuration per W107 Rockwell linesVL70-000139B data for (1) of (2) sidesScale Model = 0.004DRAWING NUMBER: VL70-000139B

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ FT^2	<u>205.52</u>	<u>0.003288</u>
Span (equivalent) ~ IN.	<u>353.34</u>	<u>1.41336</u>
Inb'd equivalent chord	<u>114.78</u>	<u>0.45912</u>
Outb'd equivalent chord	<u>55.00</u>	<u>0.220</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>.208</u>	<u>.208</u>
At Outb'd equiv. chord	<u>.400</u>	<u>.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>-10.24</u>	<u>-10.24</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) ~ FT^3	<u>1548.07</u>	<u>0.00010</u>
Product of Area Moment		

TABLE III. (CONTINUED)

MODEL COMPONENT: OMS Pod - M4GENERAL DESCRIPTION: 3 Lightweight configuration per Rockwell
Lines VL70-000139Scale Model = 0.004DRAWING NUMBER VL70-000139

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>346.0</u>	<u>1.3840</u>
Max Width ~ IN.	<u>108.0</u>	<u>0.4320</u>
Max Depth ~ IN.	<u>113.0</u>	<u>113.0</u>
Fineness Ratio	<u> </u>	<u> </u>
Area		
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

D of OMS Pod

WP = 463.9 INFS: WP400 + 63.9 = 463.9

BP = 80.0 INFS

Length 1214.0 to 1560.0 = 346.0 INFS

NOTE: M4 identical to M3 of 2A configuration except
intersection to body

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₁₉GENERAL DESCRIPTION: Trimmer for Configuration 3, per
lines VL70-000139BNOTE: Data for one (1) Side OnlyMODEL SCALE = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>222.5</u>	<u>0.890</u>
Max Width ~ in.	<u>66.25</u>	<u>0.265</u>
Max Depth	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area ~ Ft ²	<u> </u>	<u> </u>
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>55.21</u>	<u>0.000884</u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Included Angle ~ Deg	<u>17.64</u>	<u>17.64</u>
Leading Edge intersects Fuse @ sta.	<u>548.0</u>	<u>2.192</u>
Trailing Edge intersects Fuse @ sta.	<u>748.8</u>	<u>2.995</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer H₂₀GENERAL DESCRIPTION: Trimmer for configuration 3, per lines
VL70-000139BModel Scale = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ In.	<u>204.5</u>	<u>0.818</u>
Max Width ~ In.	<u>42.125</u>	<u>0.1685</u>
Max Depth	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area ~ Ft ²	<u> </u>	<u> </u>
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>23.74</u>	<u>0.00038</u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Included Angle ~ deg	<u>8.95</u>	<u>8.95</u>
Leading Edge intersects Fuse @ sta.	<u>560.75</u>	<u>2.243</u>
Trailing Edge intersects Fuse @ sta.	<u>765.25</u>	<u>3.061</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₂₂GENERAL DESCRIPTION: Trimmer for configuration 3, for lines
VL70-000139BNOTE: Data for one (1) side onlyMODEL SCALE - .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>137.12</u>	<u>0.5485</u>
Max Width ~ in.	<u>61.75</u>	<u>0.247</u>
Max Depth	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area ~ Ft.	<u> </u>	<u> </u>
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>32.745</u>	<u>0.000524</u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Included Angle ~ deg	<u>28.2</u>	<u>28.2</u>
Leading Edge intersects Fuse @ sta.	<u>433.62</u>	<u>1.7345</u>
Trailing Edge intersects Fuse @ sta.	<u>570.75</u>	<u>2.283</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₂₃GENERAL DESCRIPTION: Trimmer for configuration 3, per lines
VL70-000139B, Nose mountedMODEL SCALE = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in. (@ $B_0 = 331$)	<u>96.5</u>	<u>0.386</u>
Max Width ~ in.	<u>46.12</u>	<u>0.1845</u>
Max Depth	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area ~ Ft ²		
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>21.285</u>	<u>0.000341</u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Included Angle ~ deg	<u>36.12</u>	<u>36.12</u>
Leading Edge intersects Fus @ sta. 280.38	<u> </u>	<u>1.1215</u>
Trailing Edge intersects Fus @ sta.	<u>376.87</u>	<u>1.507</u>

TABLE III. (CONCLUDED)

MODEL COMPONENT: Spoiler - B_1 GENERAL DESCRIPTION: Spoiler for configuration 3, lines
drawing VL70-000139.NOTE: Data for (1) side onlyMODEL SCALE = .004





DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	250.0	1.0
Max Width ~ in.	25	0.10
Max Depth ~ in.	25	0.10
Fineness Ratio		
Area ~ ft^2		
Max Cross-Sectional	4.34028	0.00007
Planform		
Wetted		
Base		

NOTE: Located on W_{103} , 50 in. FS from and parallel to the leading edge. In board end of spoiler is 109.375 in. FS from outer moldline ($Y_o = 217.375$)

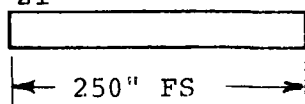
TABLE IV.
AUXILIARY SURFACE CONFIGURATIONS

TRIMMERS

NO.	PLANFORM (Included Radius, FS)	Sexposed FT ² , FS (one side)	INCI- DENCE ANGLE	MOUNTING LOCATION (Body Station*)
H19	17.63° 227.3" 	55.2	Same as Glove L.E.	Glove Apex X _O = 548.0
H20	8.95° 209.2" 	23.74	Same as Glove L.E.	Glove Apex X _O = 560.75
H22	28.2° 138.8" 	32.75	0°	Forward Body X _O = 433.6 Z _O = 408.25
H23	36.12° 98.6" 	21.28	0°	Nose X _O = 280.4 Z _O = 331.0

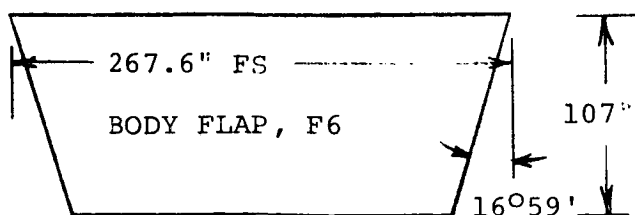
*L.E. Intersection with Fuselage

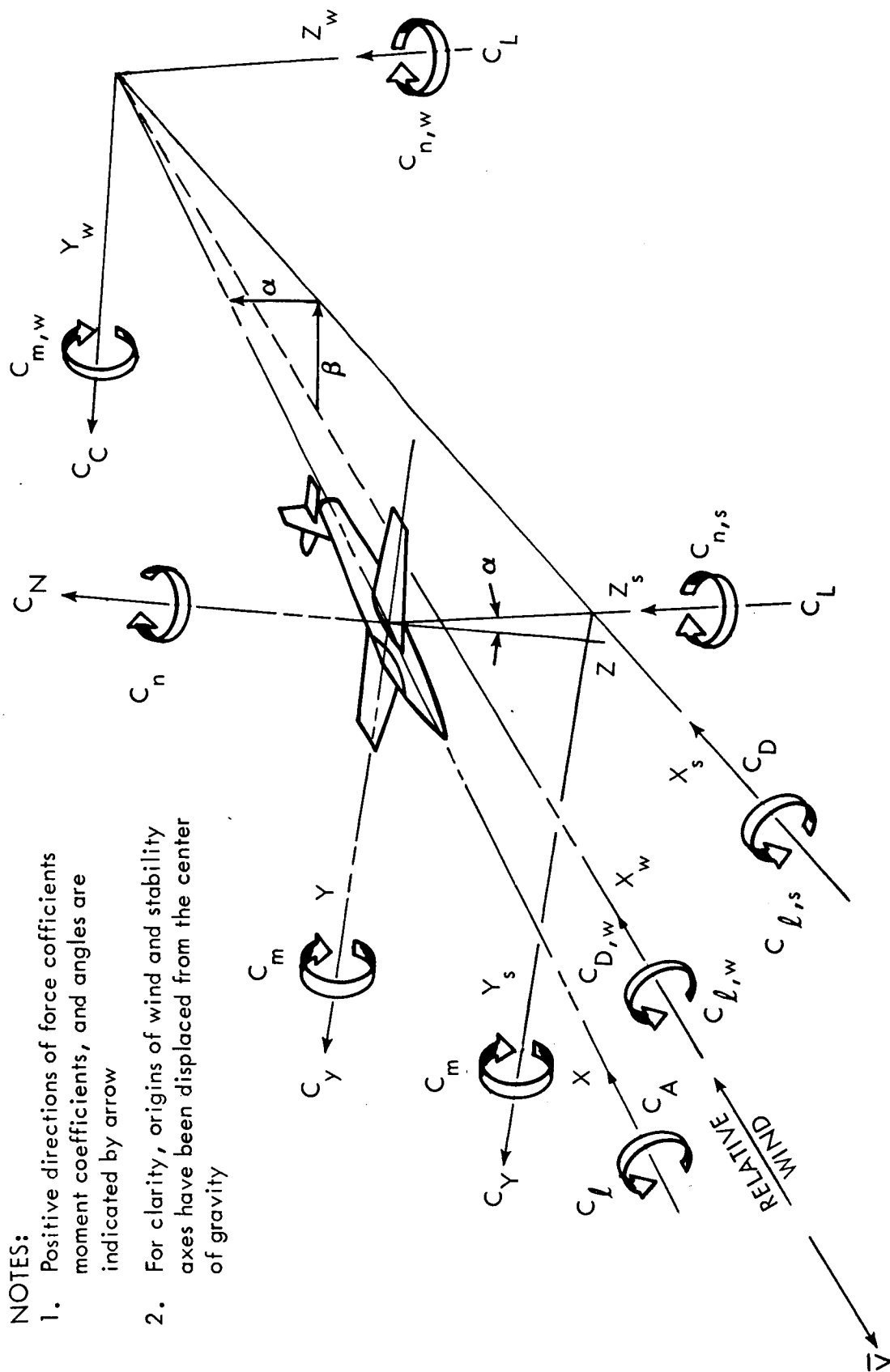
Spoiler, #1



25" 25"

Spoiler located parallel to and 50" behind L.E. of wing W103 with inboard end at Y_O = 217.375





- NOTES:
1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrow
 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

Figure 1. - Axis Systems.

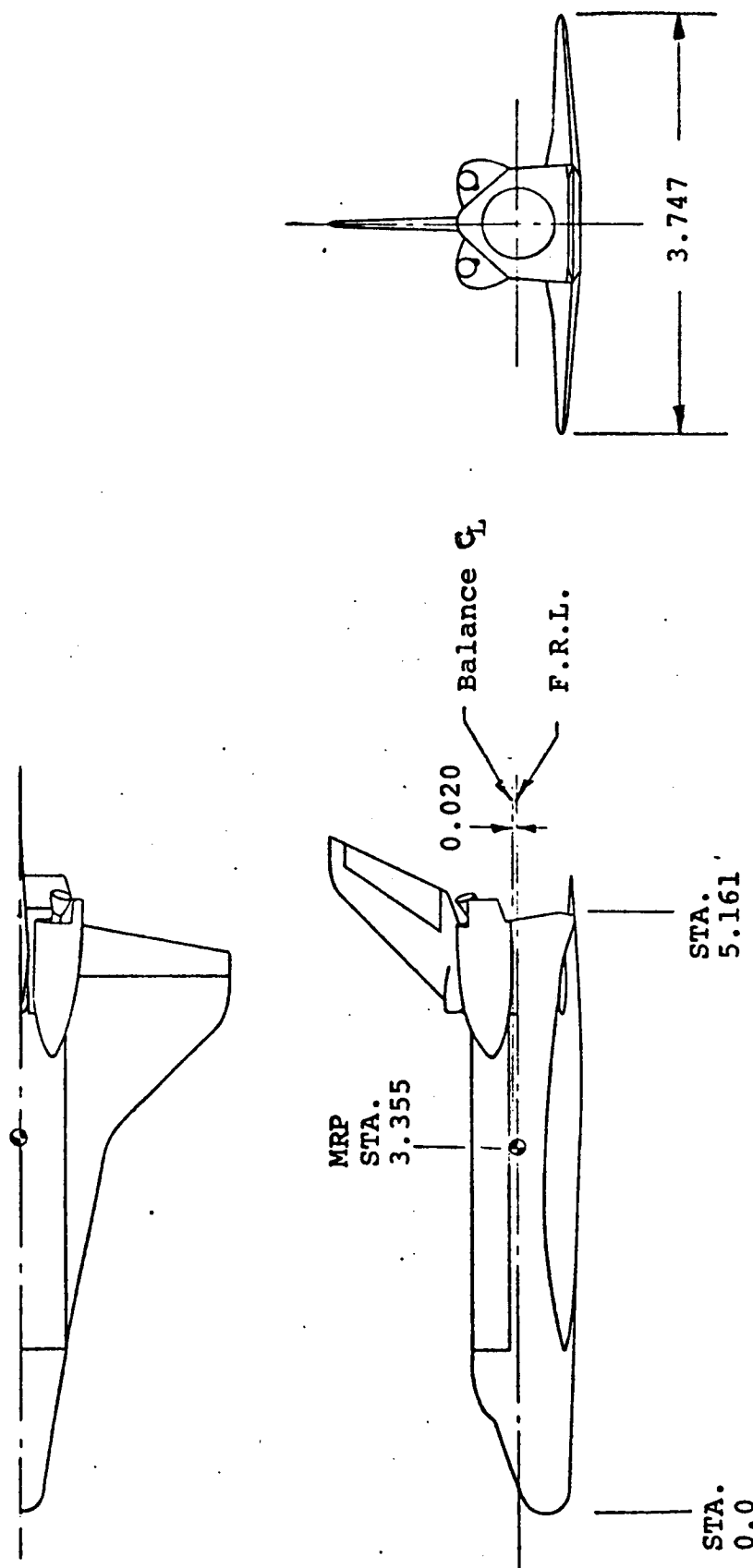


Figure 2. - General Arrangement of Orbiter Model.

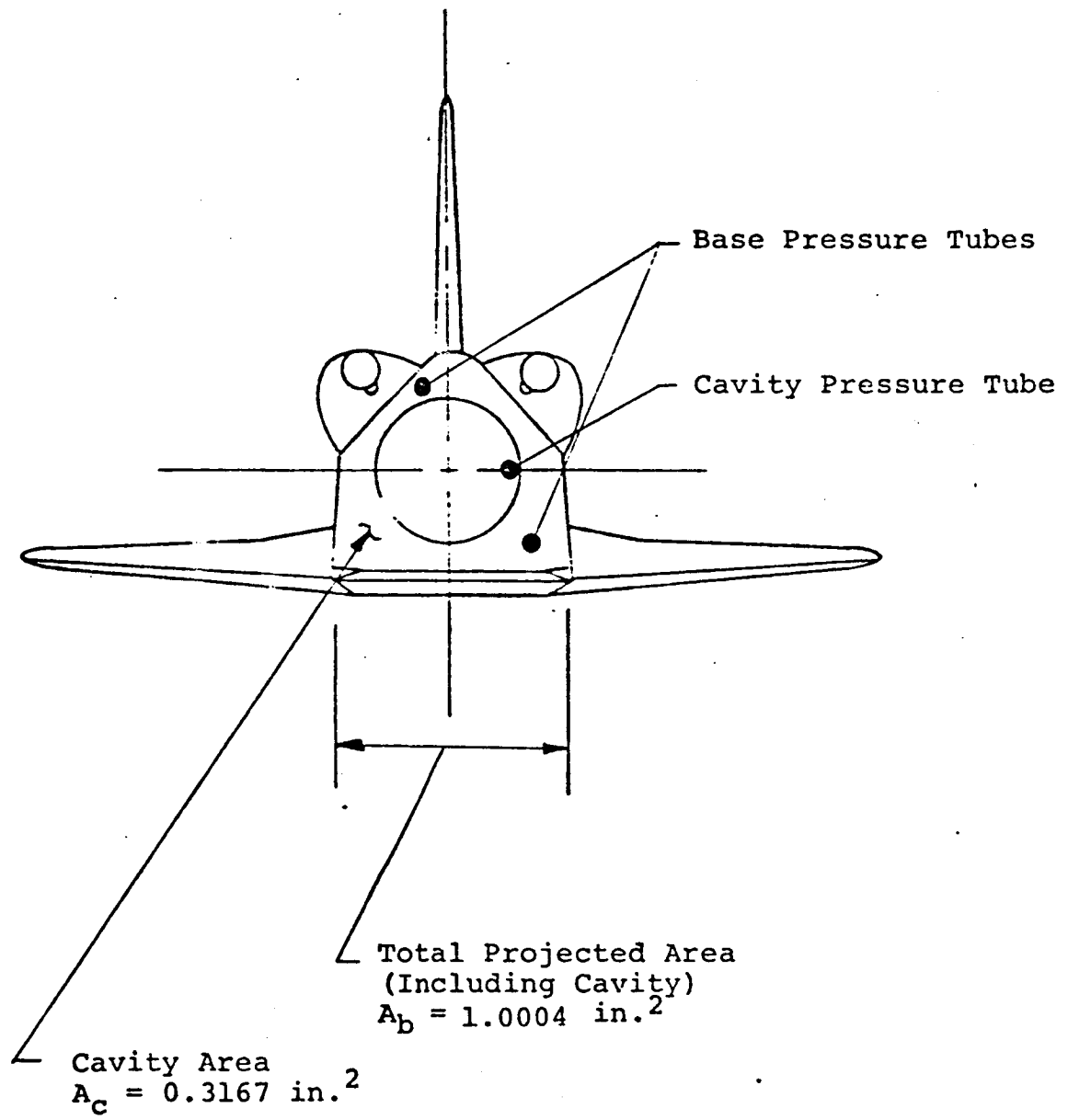


Figure 3. - Definition of Base and Cavity Areas and Pressure Tube Locations.

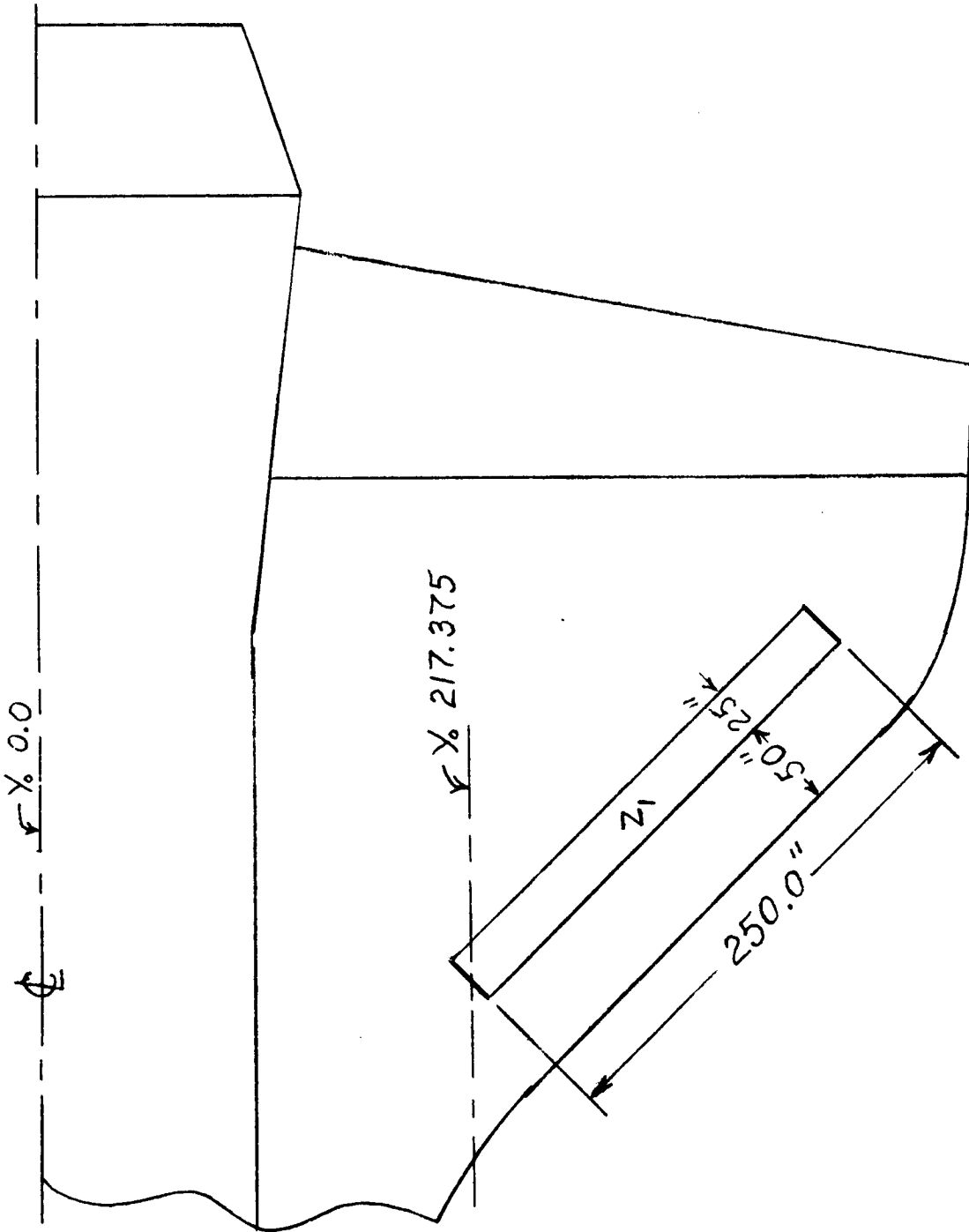
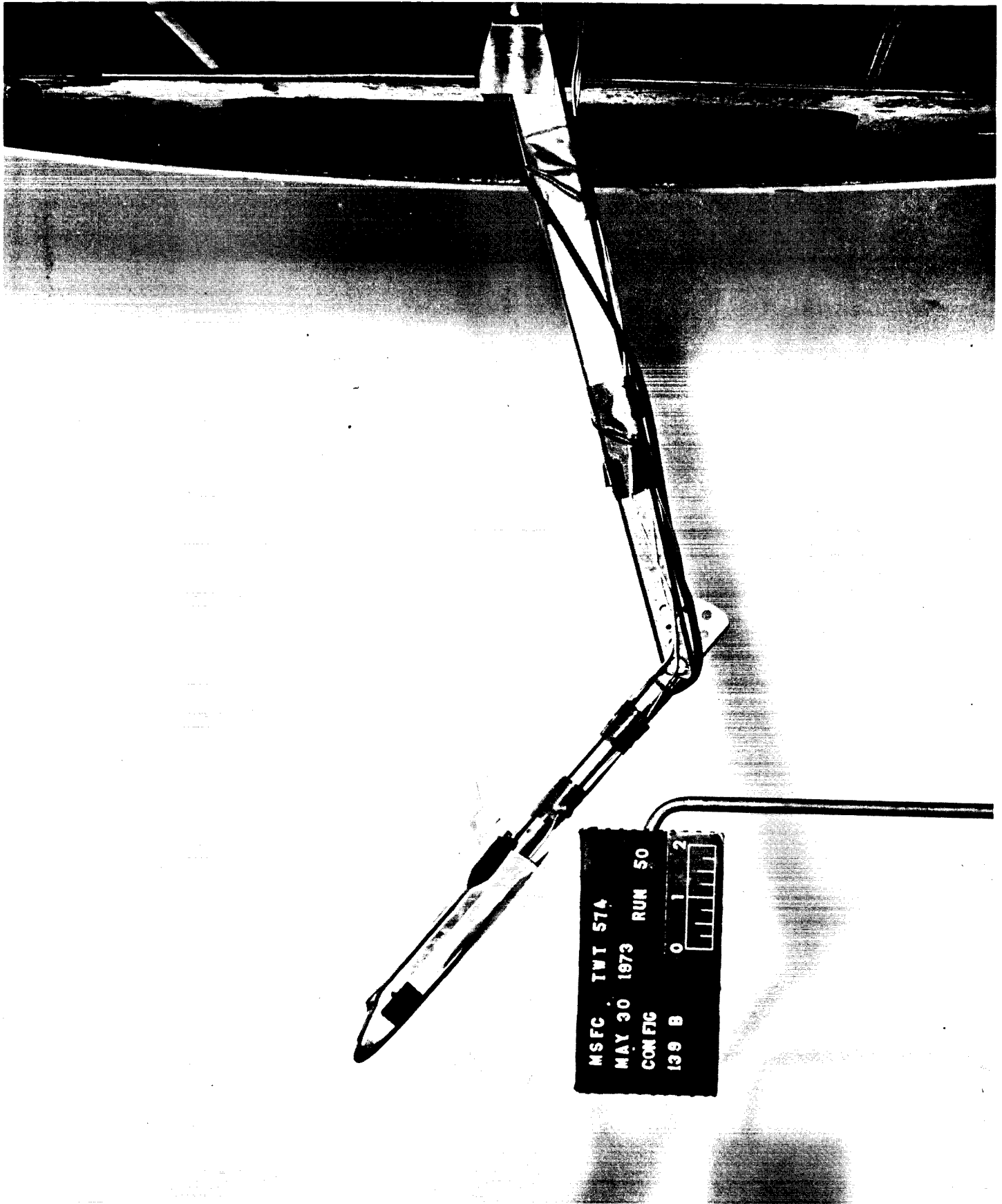
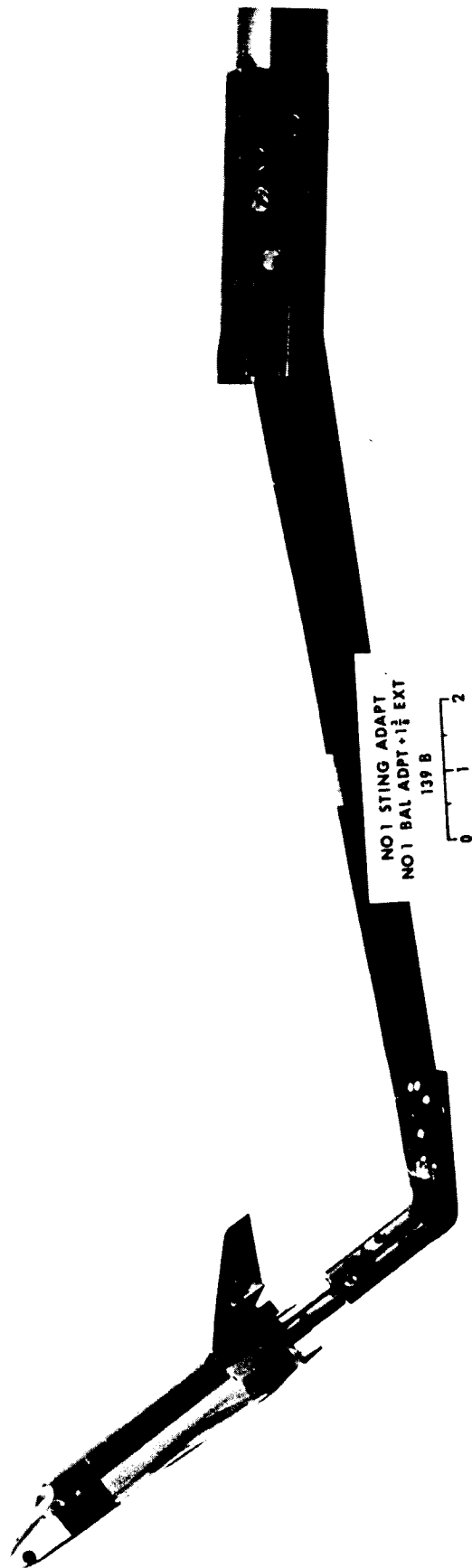


Figure 4. - Location of Spoiler Z1 on Upper Surface of Orbiter Wing W103.

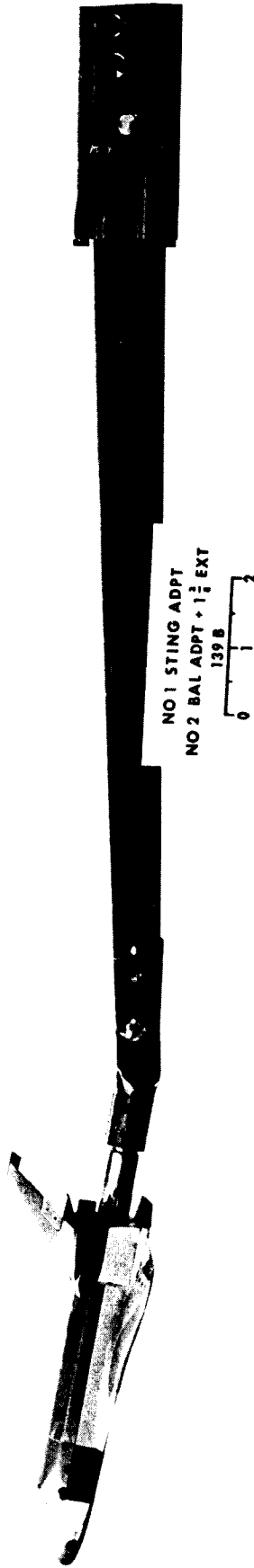


(a) Tunnel Installation Photograph
Figure 5. - Configuration 139B.

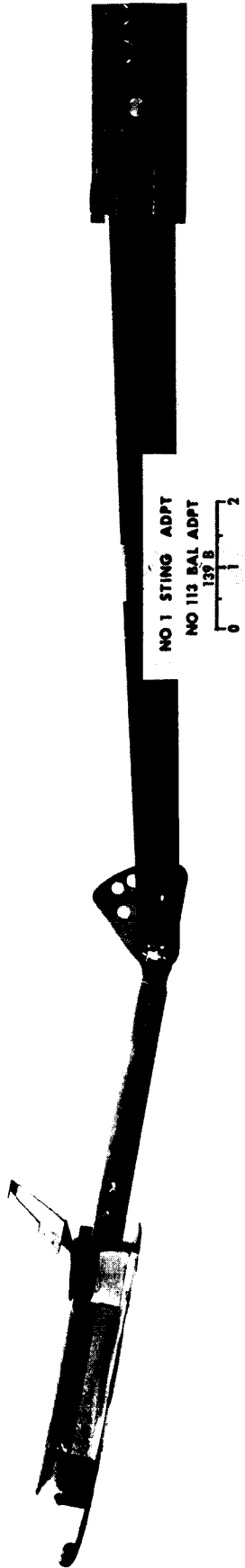


(b) No. 1 Sting Adapter, No. 1 Balance Adapter

Figure 5. - Continued.

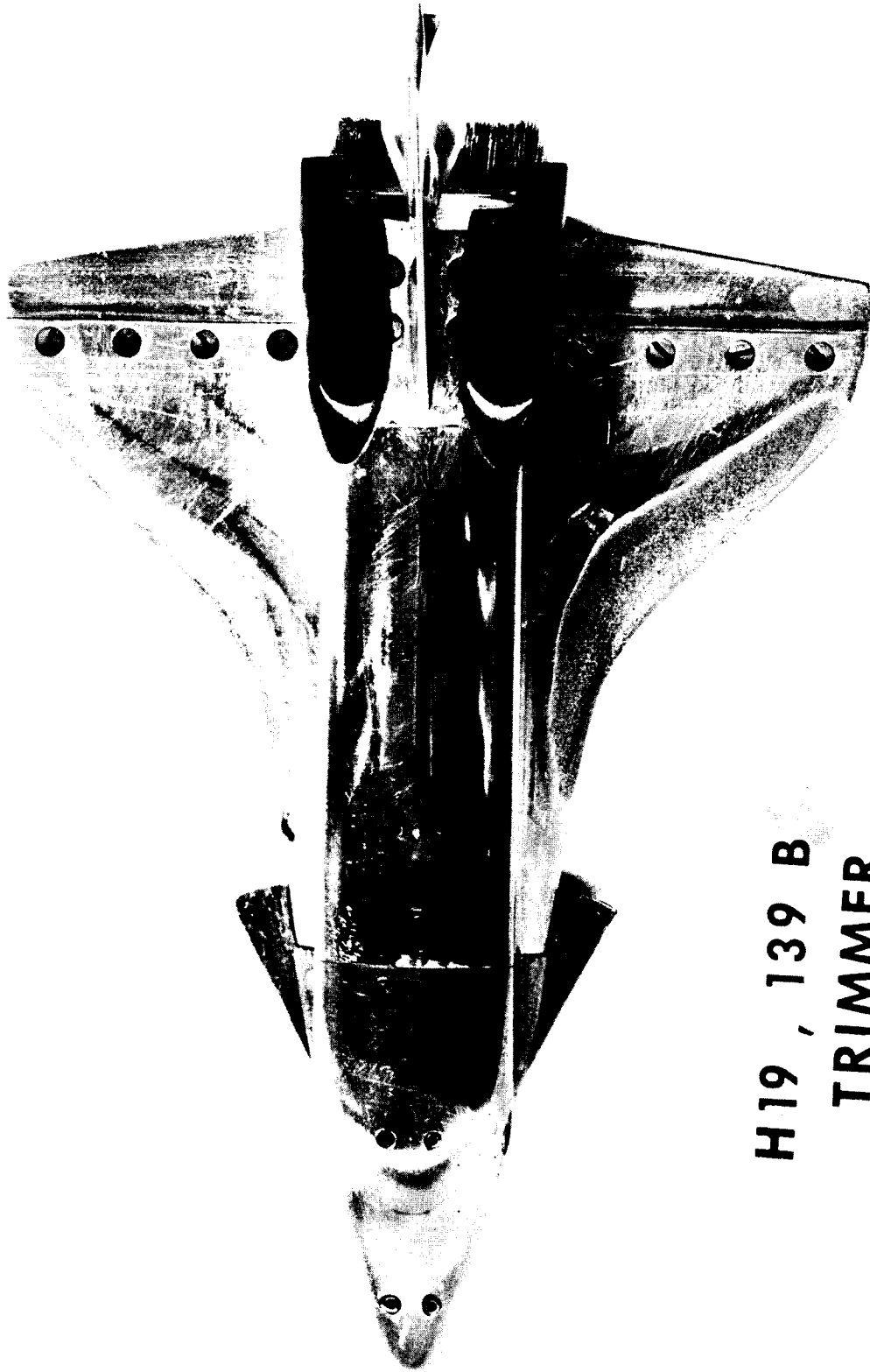


(c) No. 1. Sting Adapter, No. 2 Balance Adapter
Figure 5. - Continued.



(d) No. 1 Sting Adapter, No. 113 Balance Adapter

Figure 5. - Concluded.

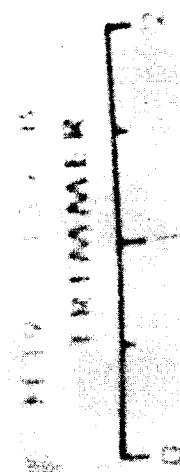


H19 , 139 B
TRIMMER



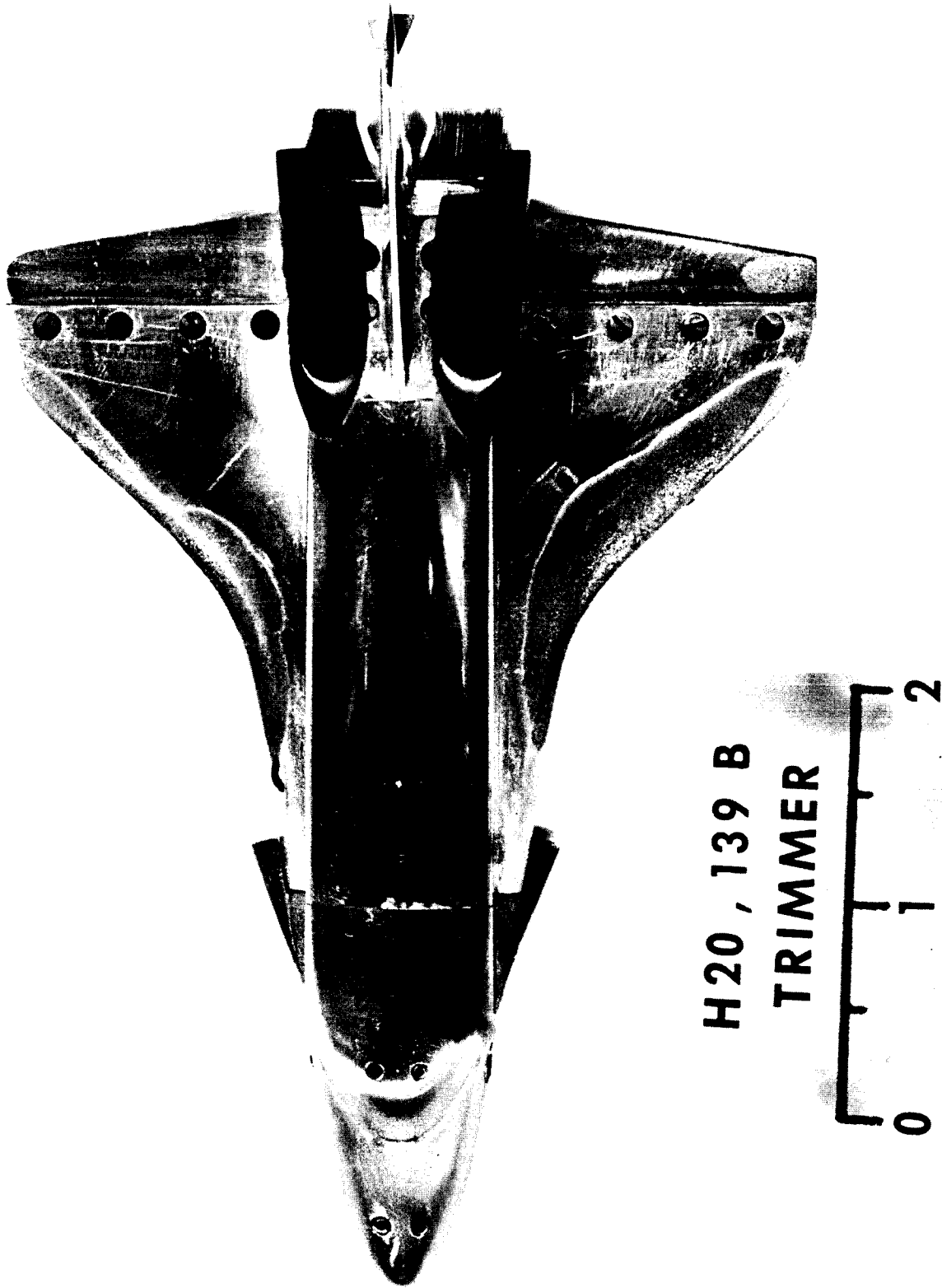
(a) Top View

Figure 6. - Configuration 139B - H19 Trimmer.



(b) Top Oblique View

Figure 6. - Concluded.



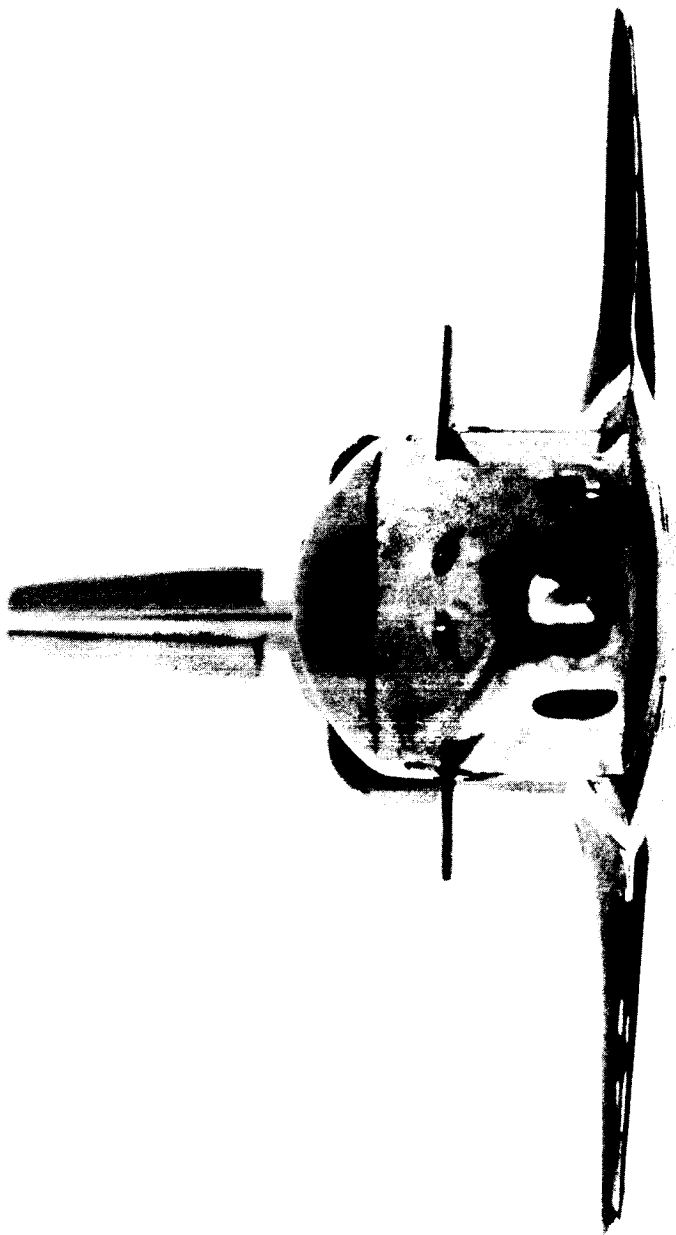
(a) Top View

Figure 7. Configuration 139B - H20 Trimmer.

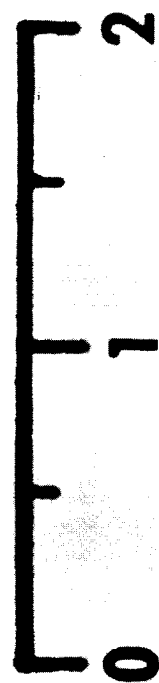


(b) Top Oblique View

Figure 7. - Concluded.

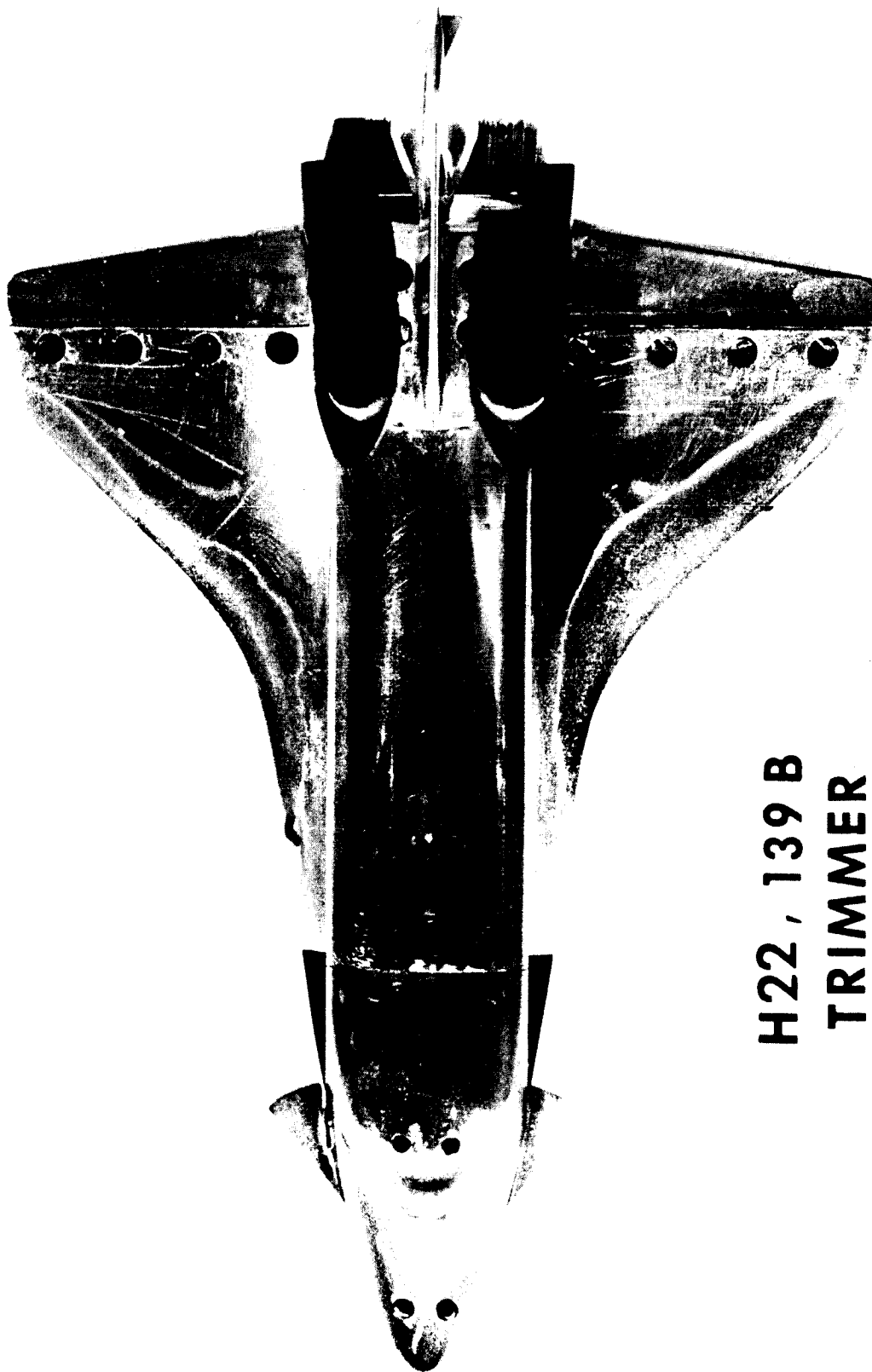


H22, 139 B **TRIMMER**

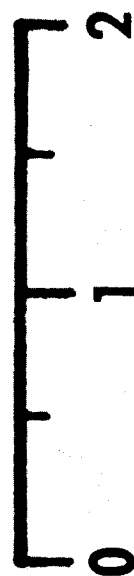


(a) Front View

Figure 8. - Configuration 139B - H22 Trimmer



H22, 139 B
TRIMMER



(b) Top View

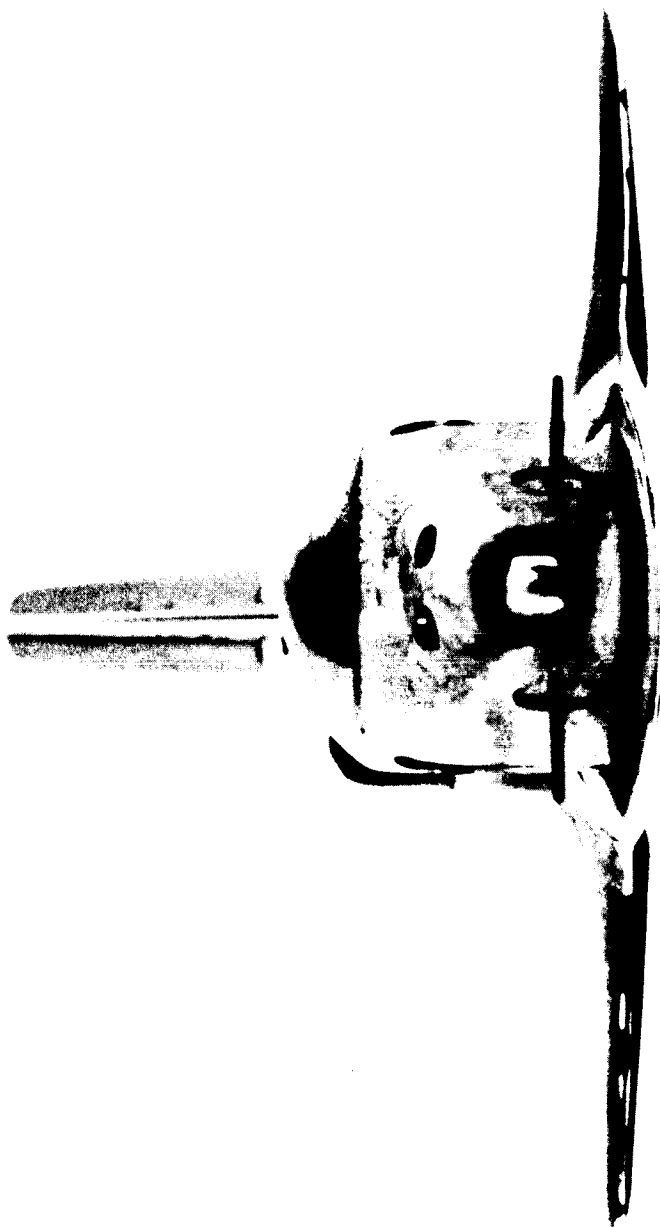
Figure 8. - Continued.

H22-139 H
TRIMMER



(c) Top Oblique View

Figure 8. - Concluded.



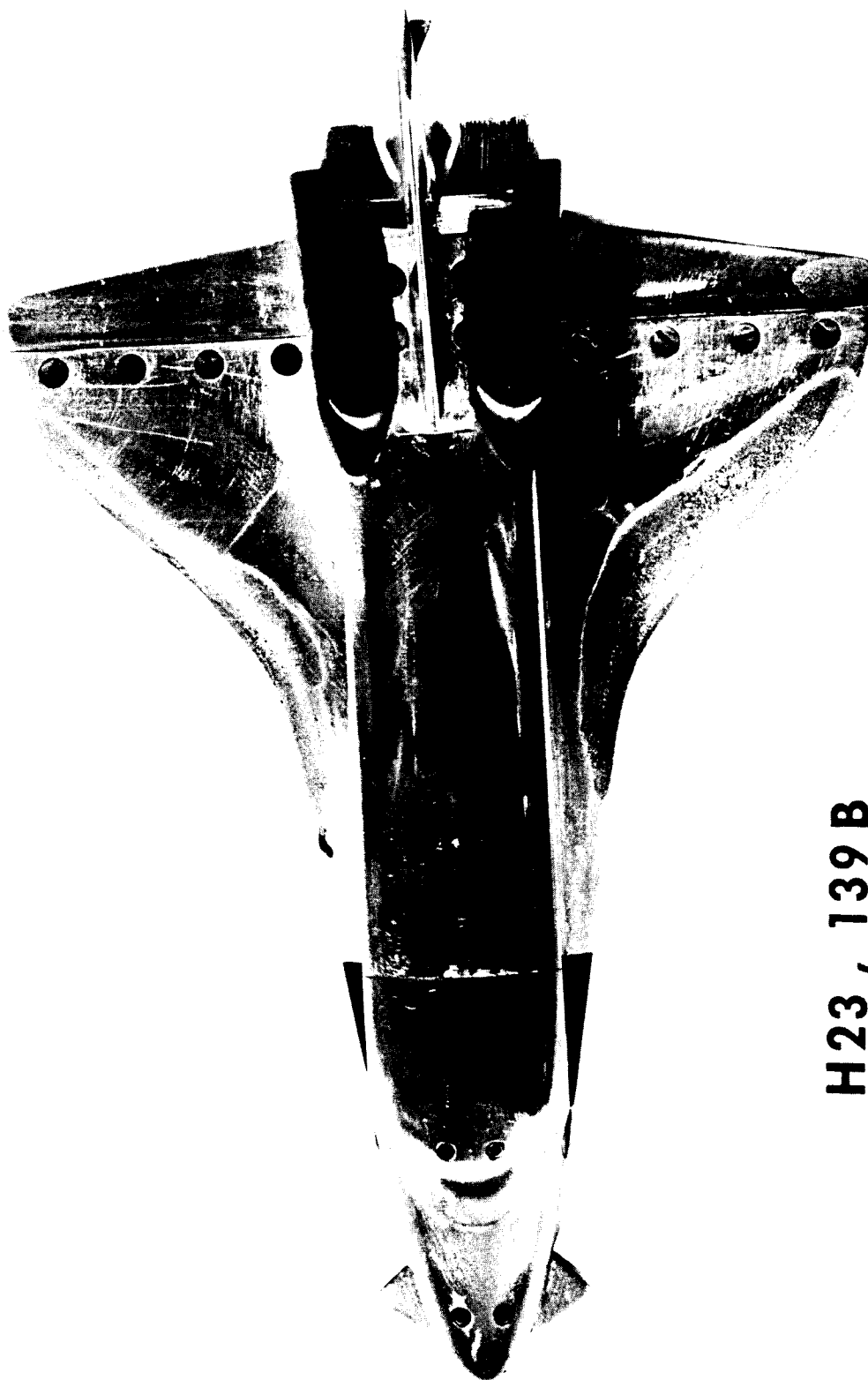
H23 , 139 B

TRIMMER



(a) Front View

Figure 9. - Configuration 139B - H23 Trimmer.



H23 , 139 B

TRIMMER



(b) Top View

Figure 9. - Continued.



(c) Top Oblique View

Figure 9. - Concluded.

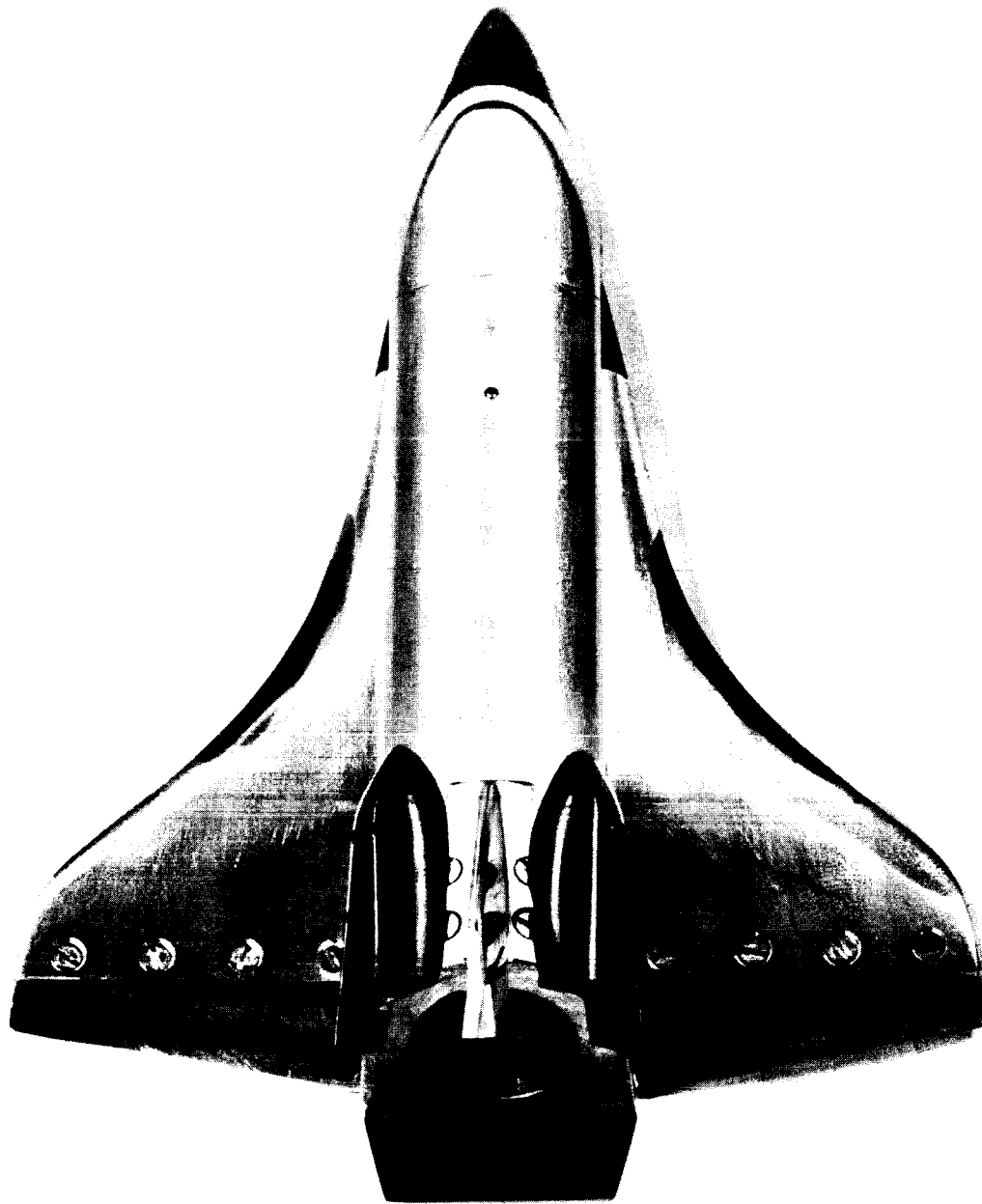
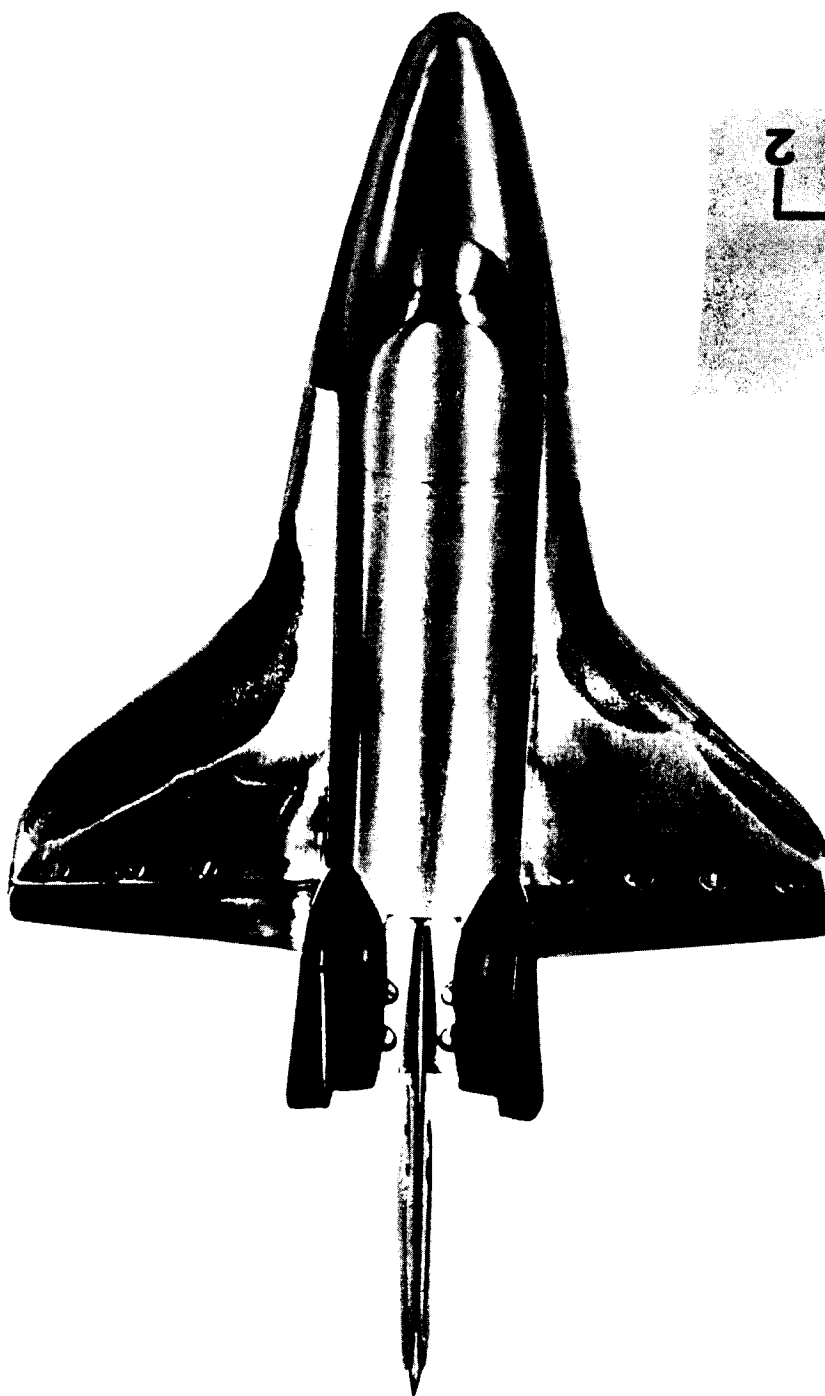


Figure 10. - Configuration 139 With 500 Inch Glove.

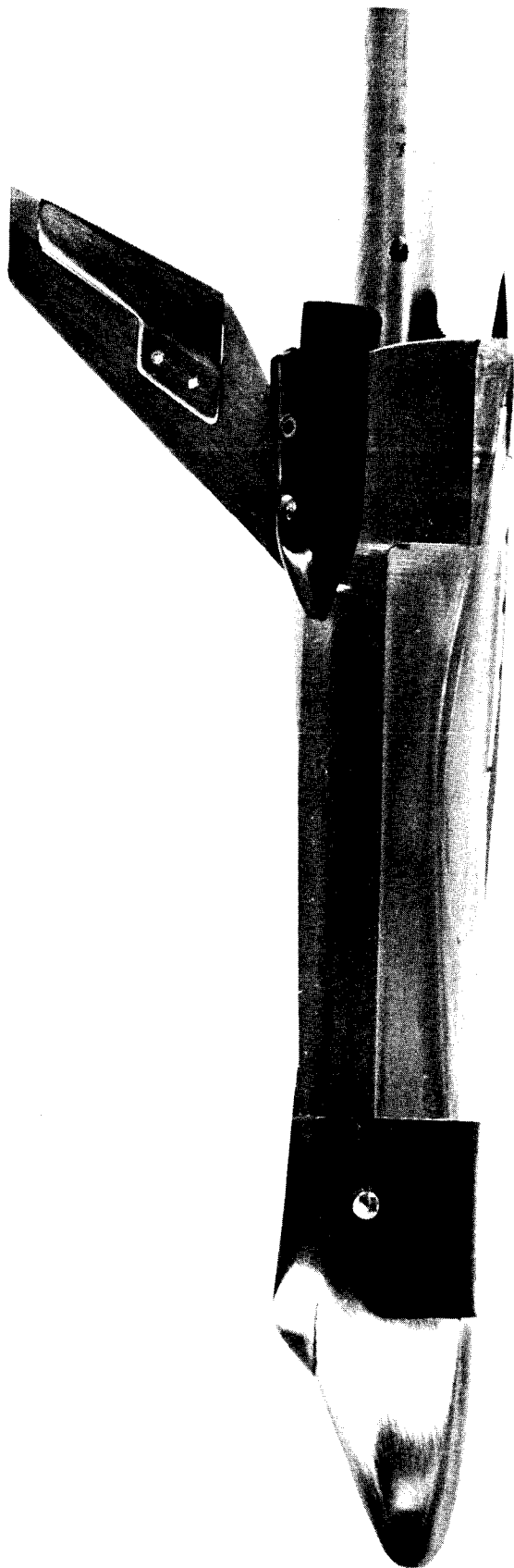
139 500" R

0 1 2

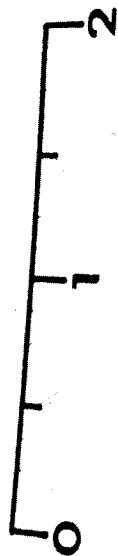


(a) Top View

Figure 11. - Configuration 139B.



139 B



(b) Side View

Figure 11. - Concluded.

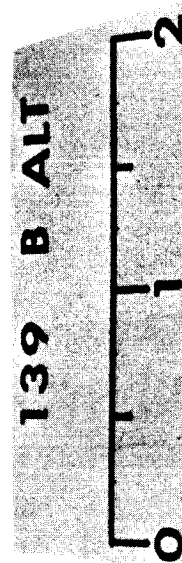
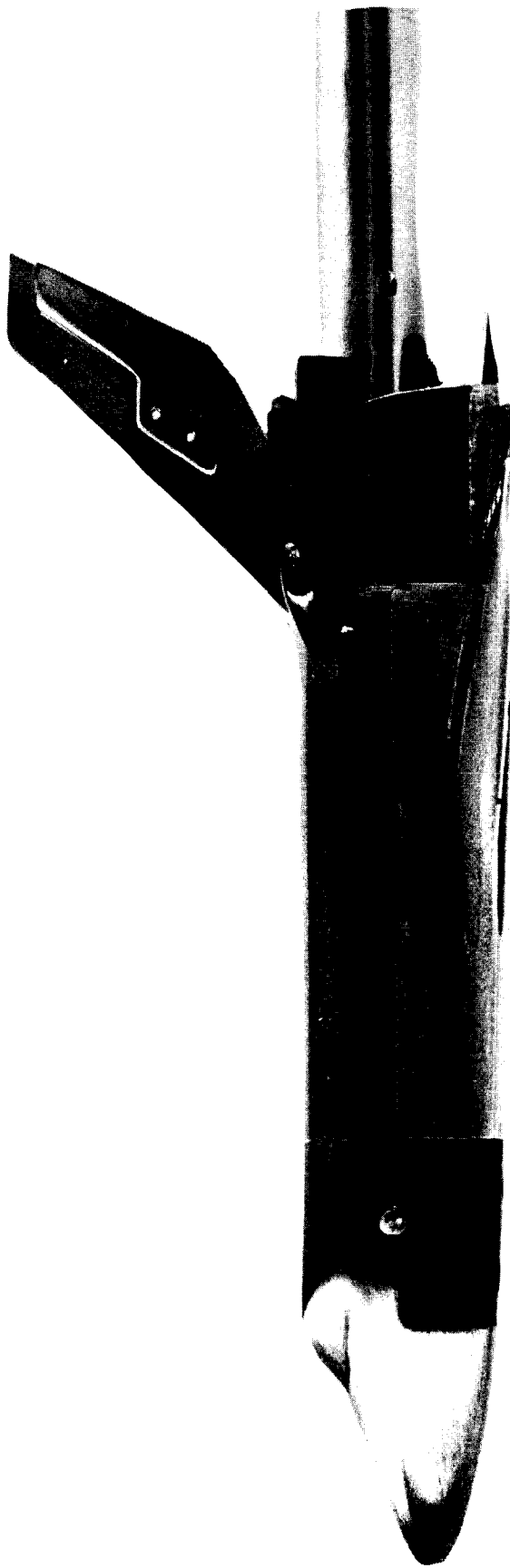
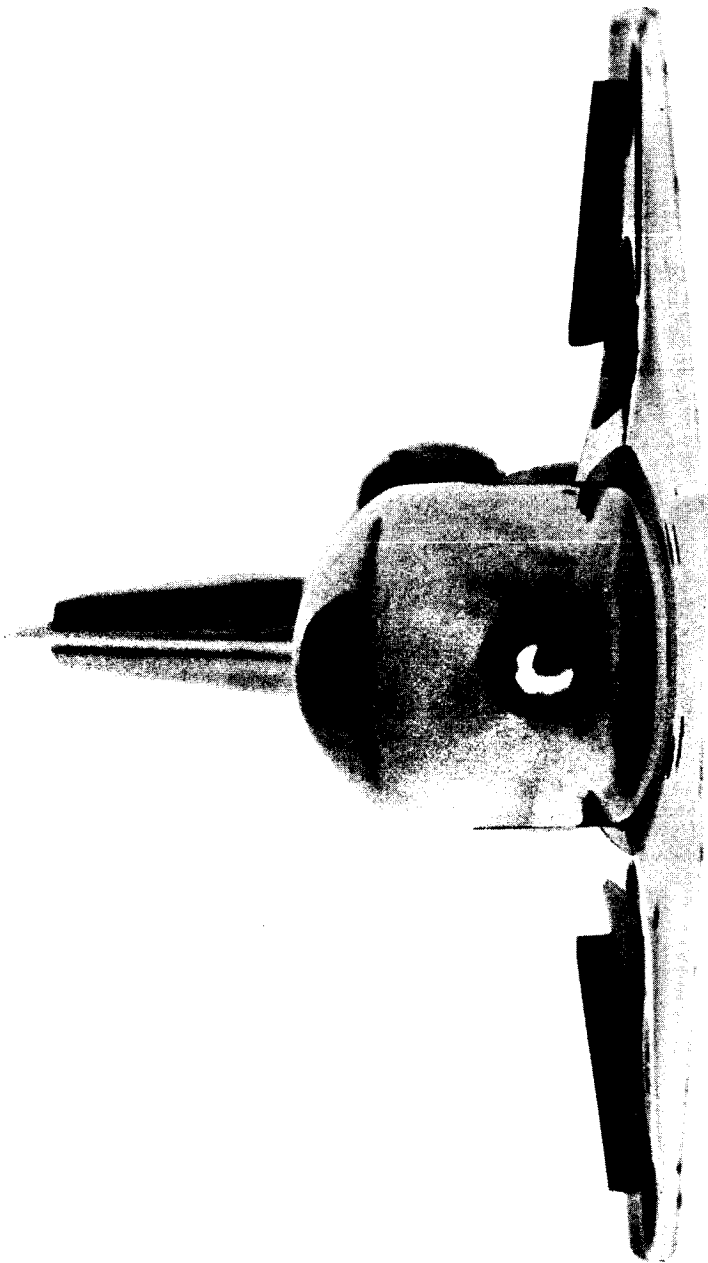


Figure 12. - Configuration 139B With Alternate Nose.



Z1 139

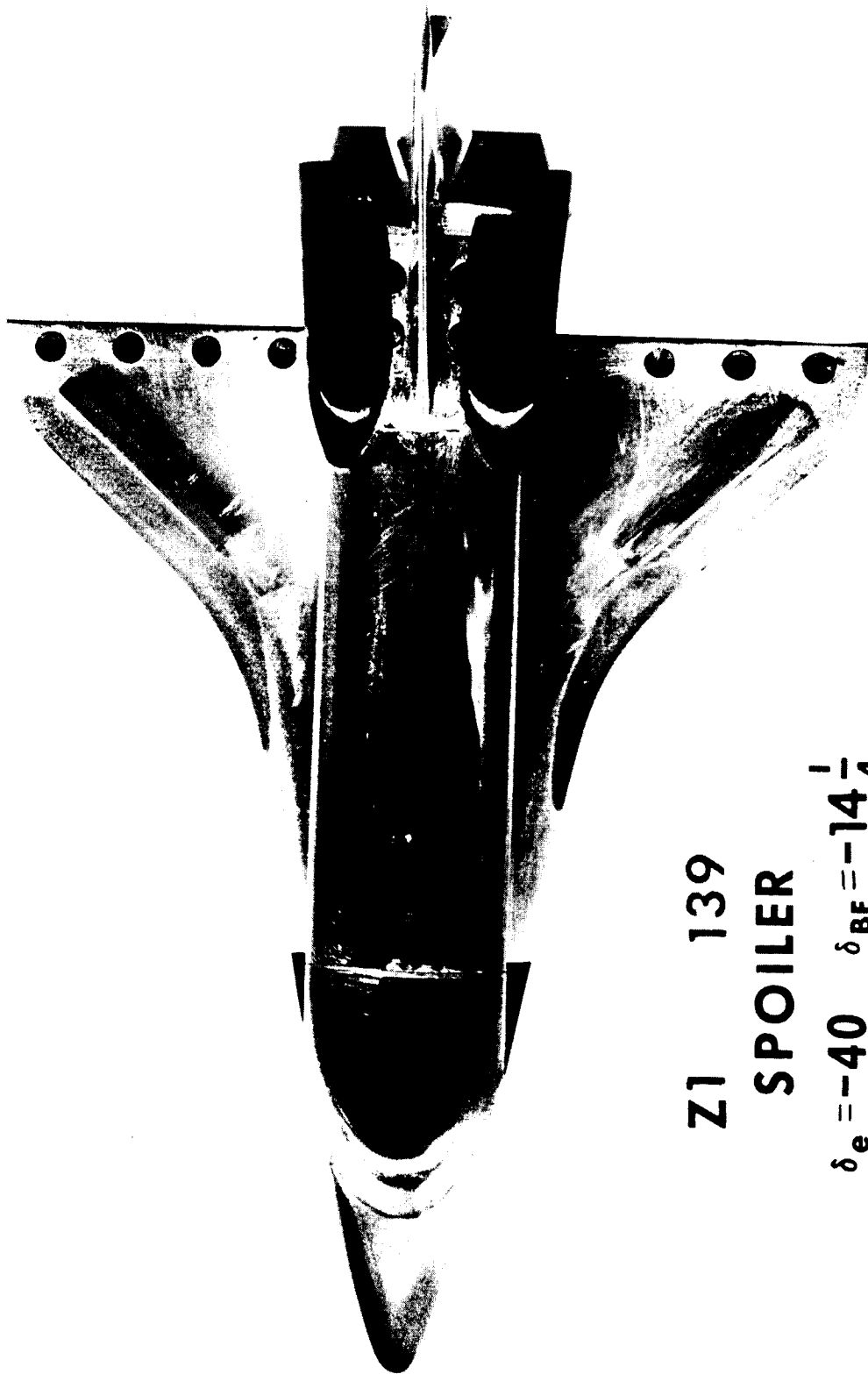
SPOILER

$\delta_0 = -40$ $\delta_{12} = -14\frac{1}{2}$

0	1	2
---	---	---

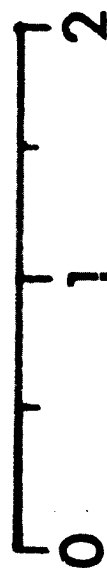
(a) Front View

Figure 13. - Configuration 139 - Z1 Spoiler.



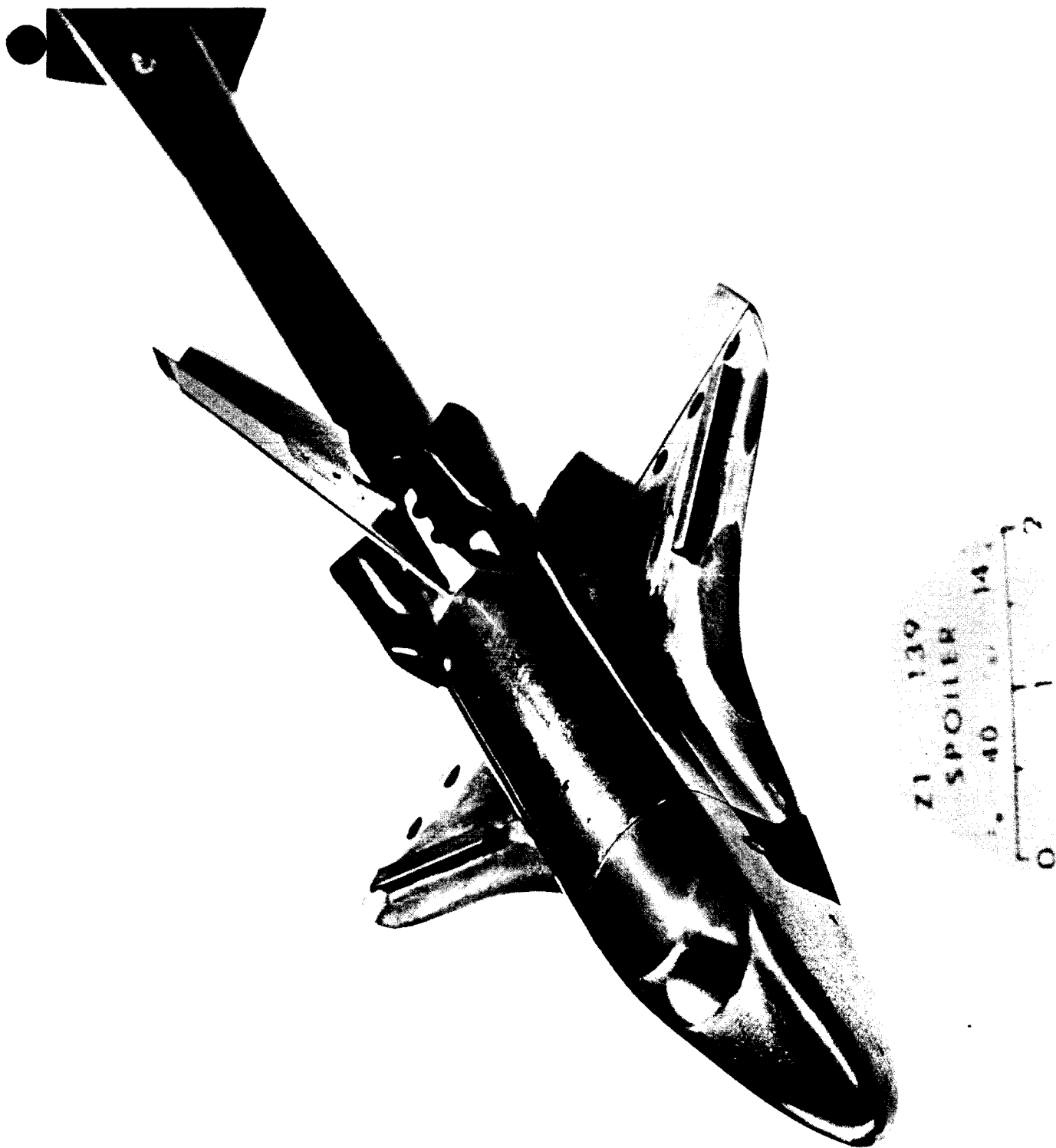
Z1 139
SPOILER

$\delta_e = -40$ $\delta_{BF} = -14\frac{1}{4}$



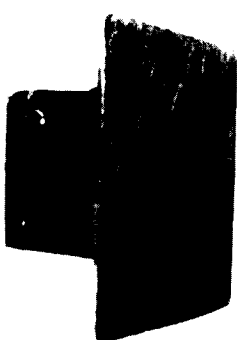
(b) Top View

Figure 13. - Continued.

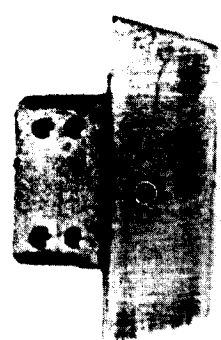


(c) Top Oblique View

Figure 13. - Concluded.



F6



F5

BODY FLAPS

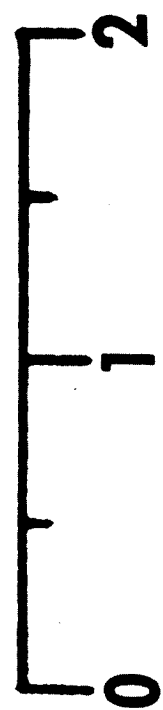


Figure 14. - Body Flaps - F₅ and F₆.

DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CRB 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) CRB 1399 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87511)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XVREF 838.7000
(F87512)	MSFC 574(CA48) CRB 1399 V/H23	.000	.000	999.990	.000	YVREF .0000
(F87513)		.000	.000	999.990	.000	ZVREF .0000
						SCALE .0040

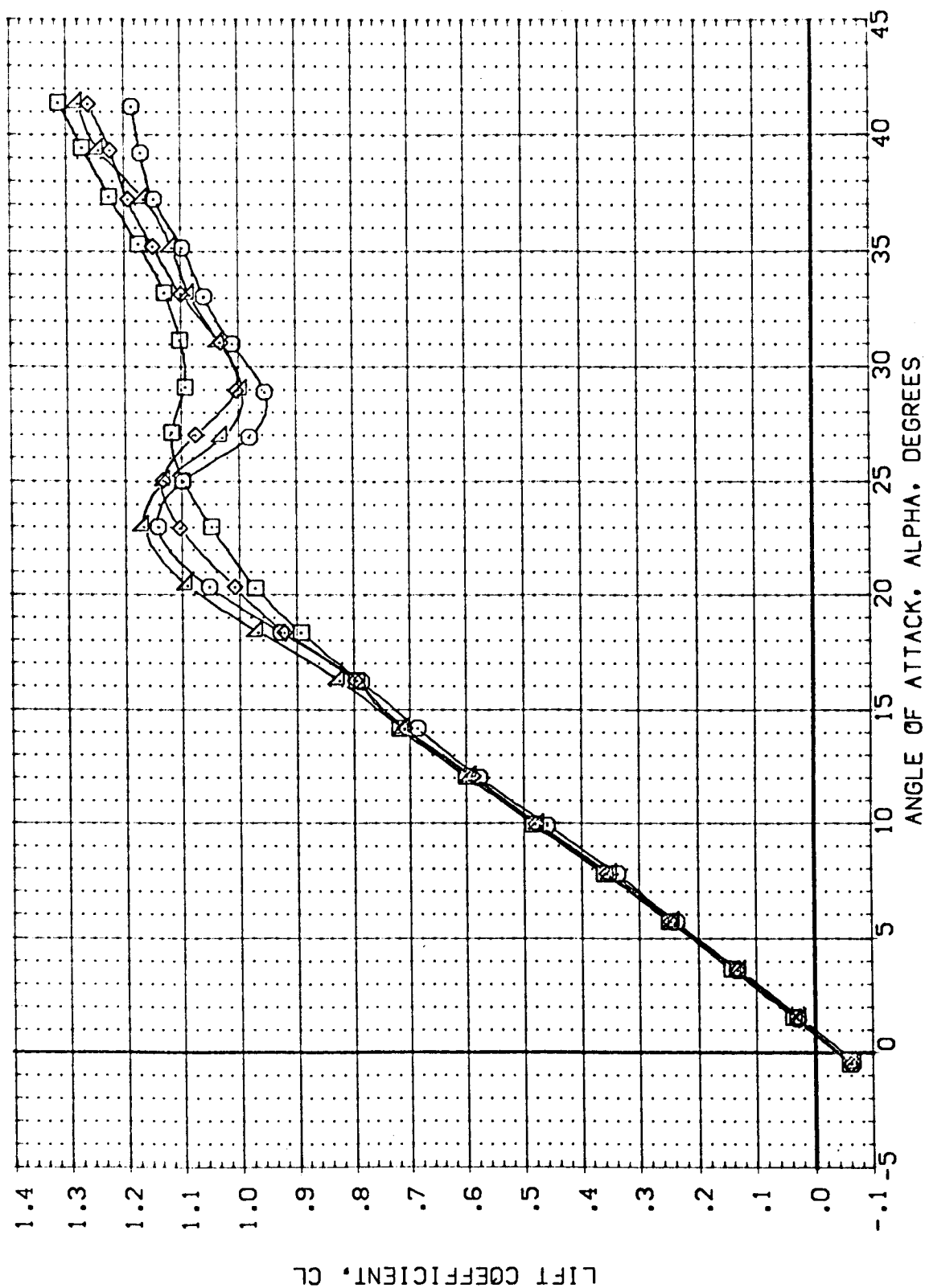


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOXLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SRCE 2690 .0000
(F87S09)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	SRCE 474 .0000
(F87S10)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	SRCE 536.7000
(F87S11)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SRCE 838.7000
(F87S12)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	SRCE .0000
						SRCE .0040
						SCALE

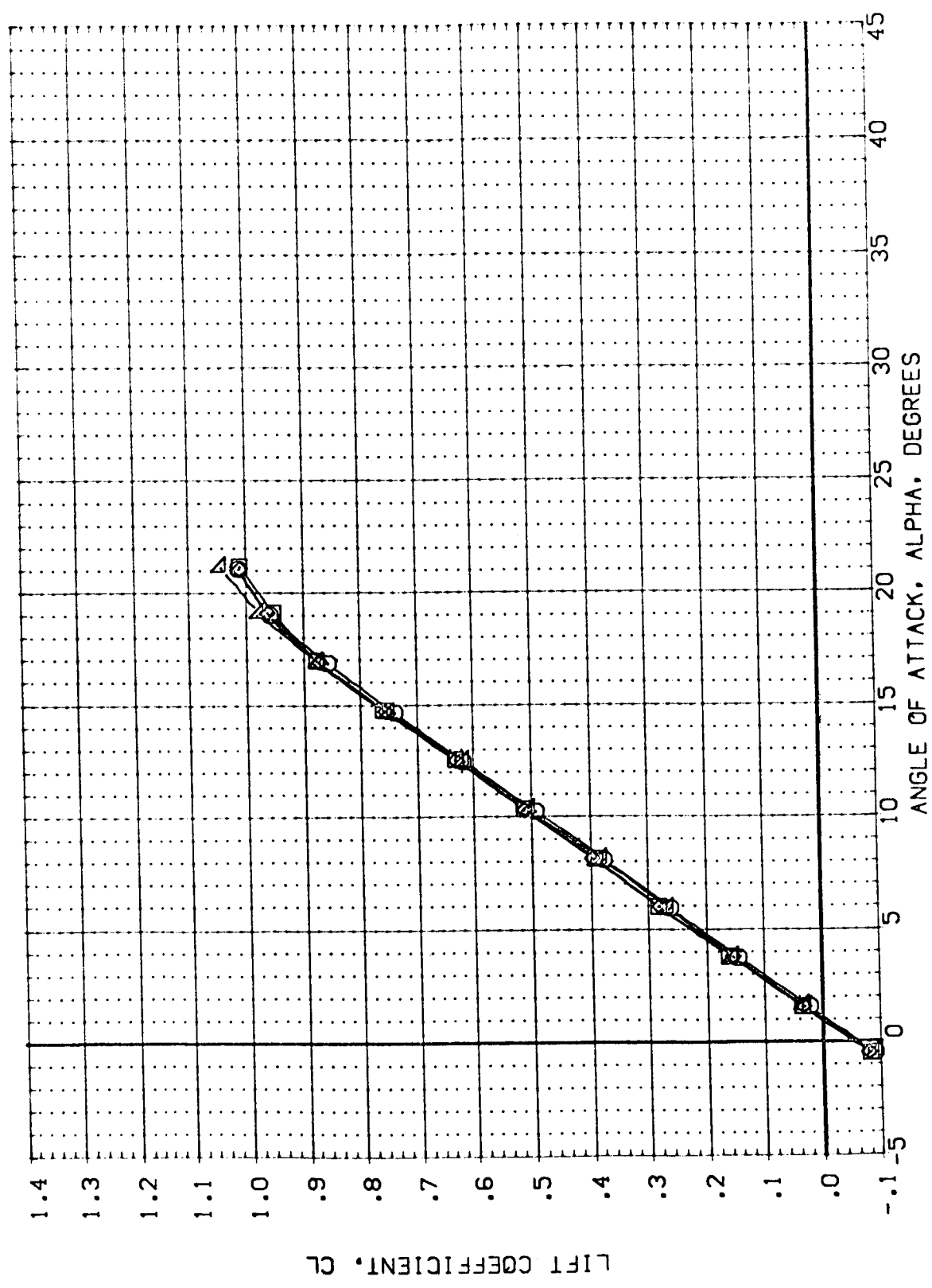


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	MSEC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 53.F.T.
(F87S85)	MSEC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSEC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87SC9)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 838.7000
(F87S93)	MSEC 574(CA48) CRB 139B V/H23	.000	.000	999.990	.000	YREF .0000
						ZREF .0000
						SCALE .0010

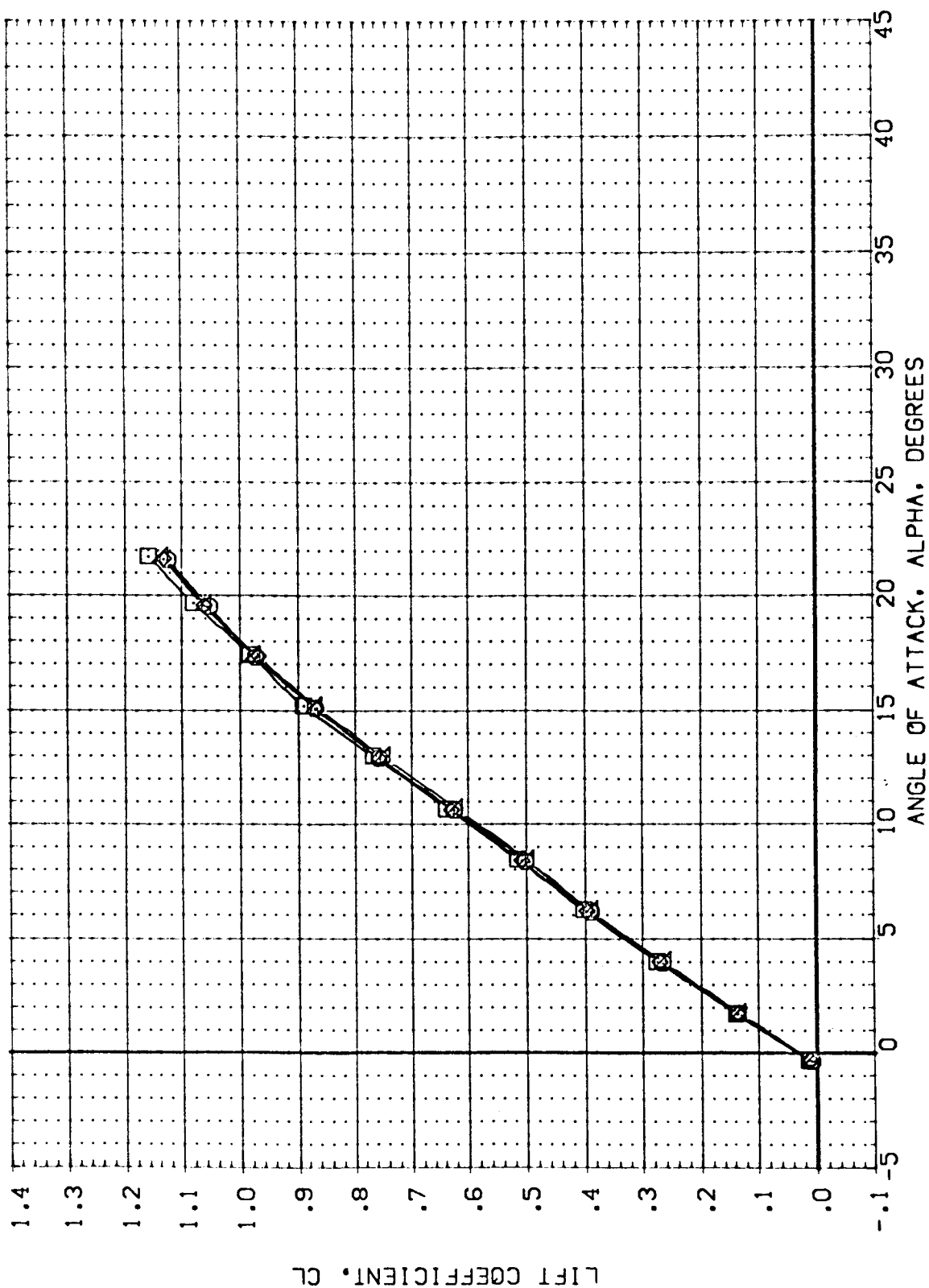


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000
(F87S85)	MSFC 574(CA48) CRB 399 V=19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 399 V=420	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87S93)	DATA NOT AVAILABLE	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

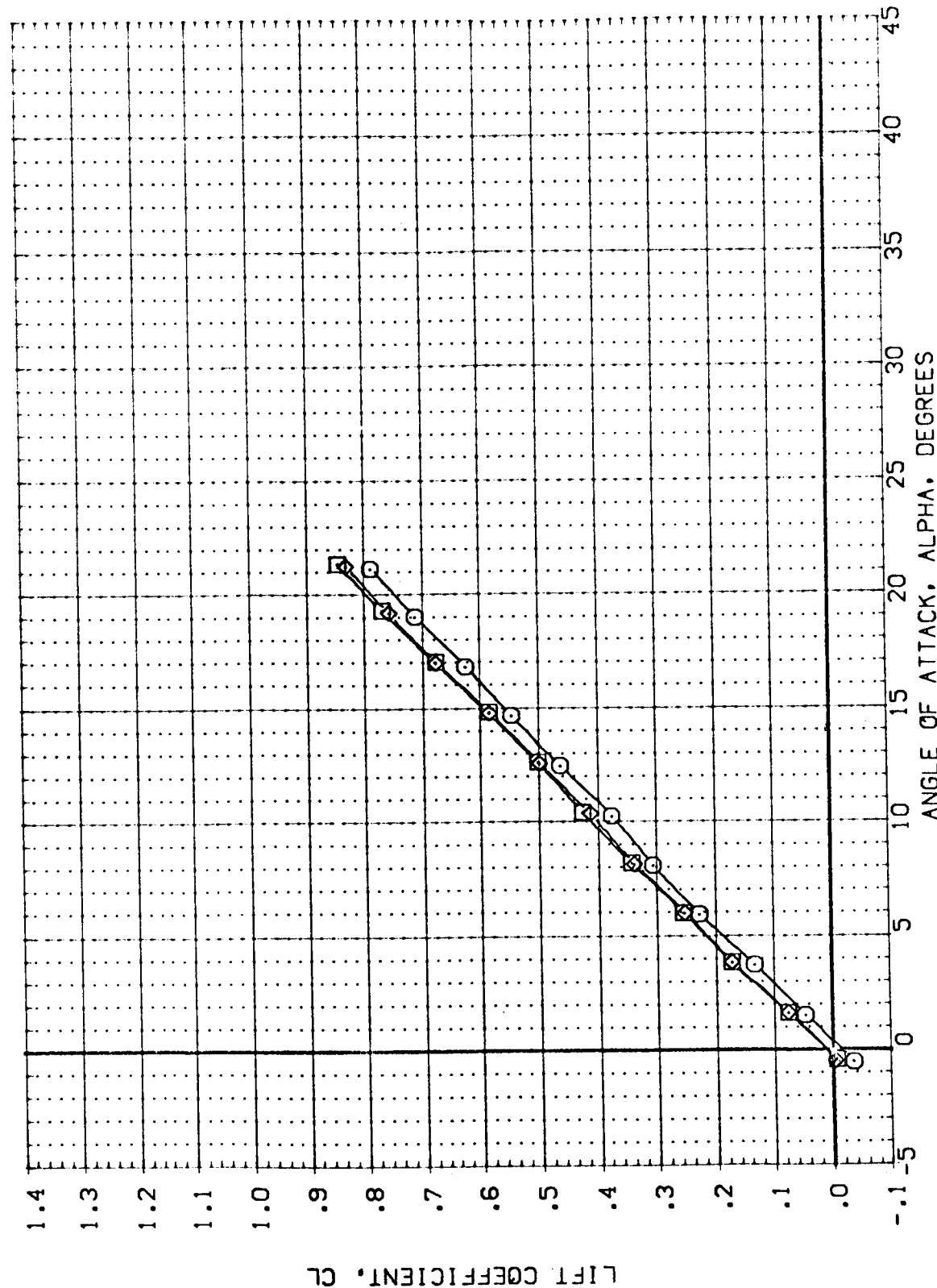
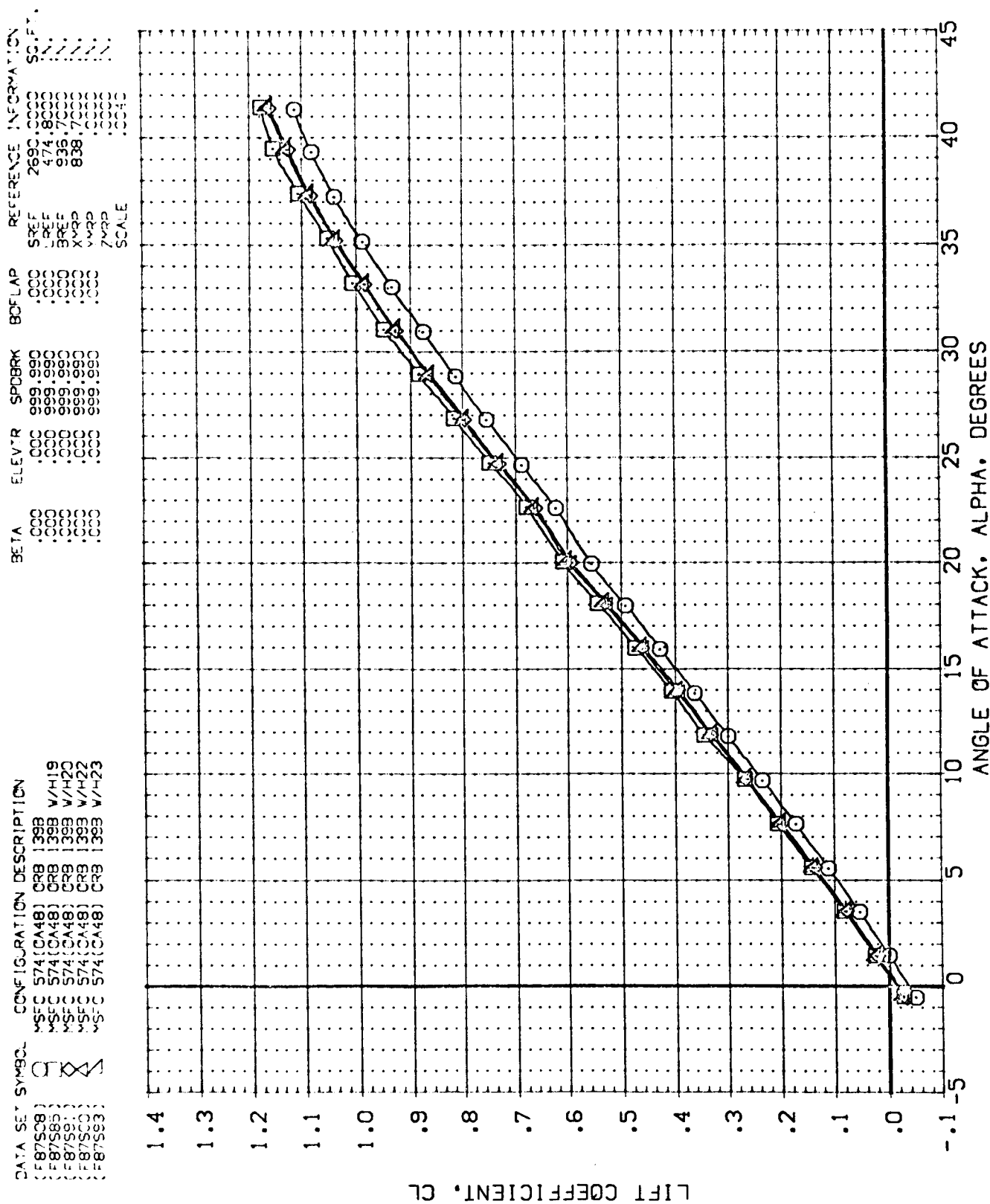


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 1.95



```
CE)MACH = 2.99
```

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDRK	BDFLAP	REFERENCE INFORMATION
(F87508)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	LREF 474.8000
(F87510)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	BREF 936.7000
(F87511)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	XVREF 838.7000
(F87512)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	YVREF .0000
(F87513)	VSFC 574(CA48) CR3 393	.000	.000	999.990	.000	ZVREF .0000
						SCALE .0040

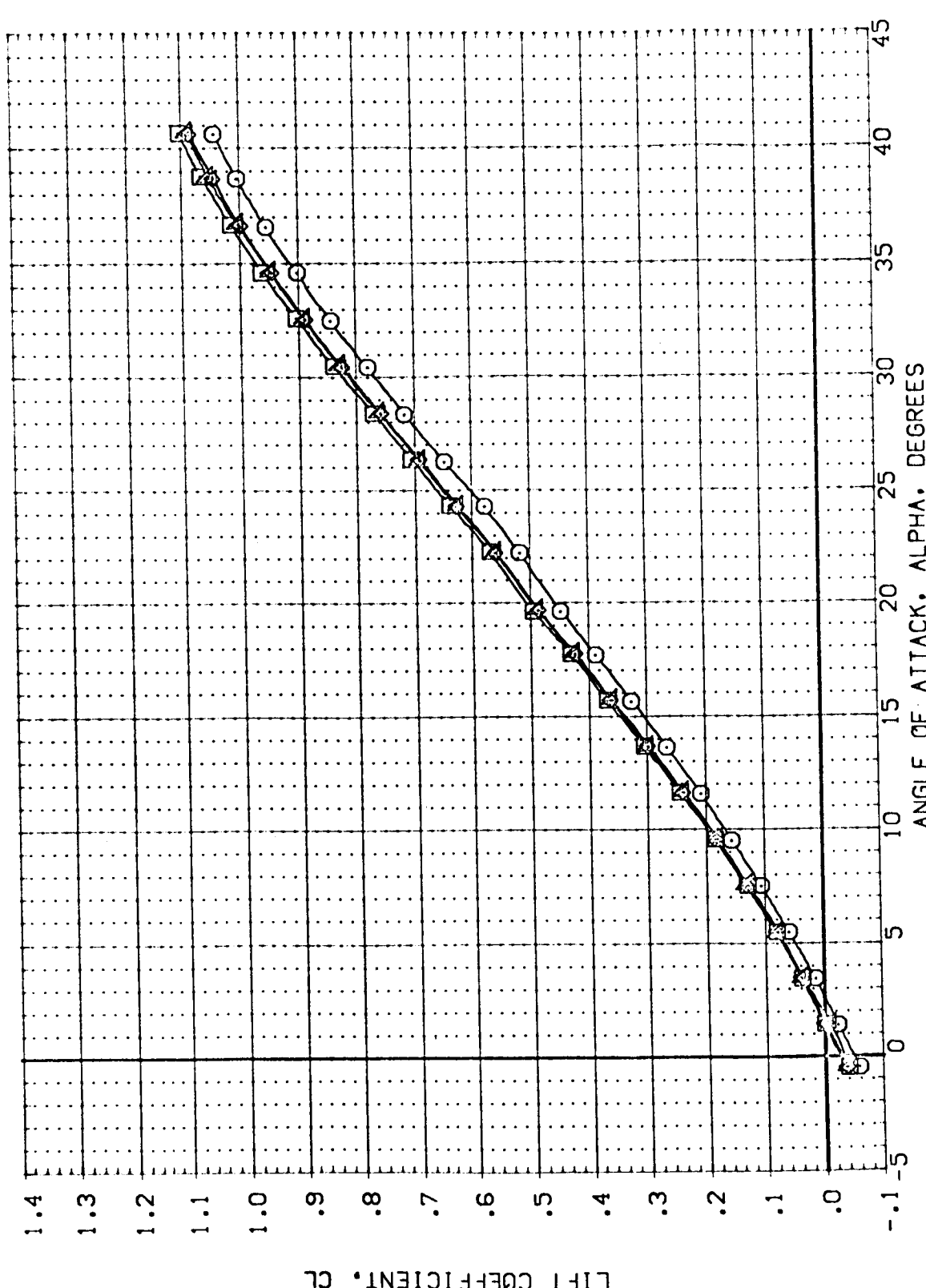


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F87508) = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SC.FT.
(F875B5)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	SC.FT.
(F875B1)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	SC.FT.
(F875C0)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SC.FT.
(F875B3)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	SC.FT.

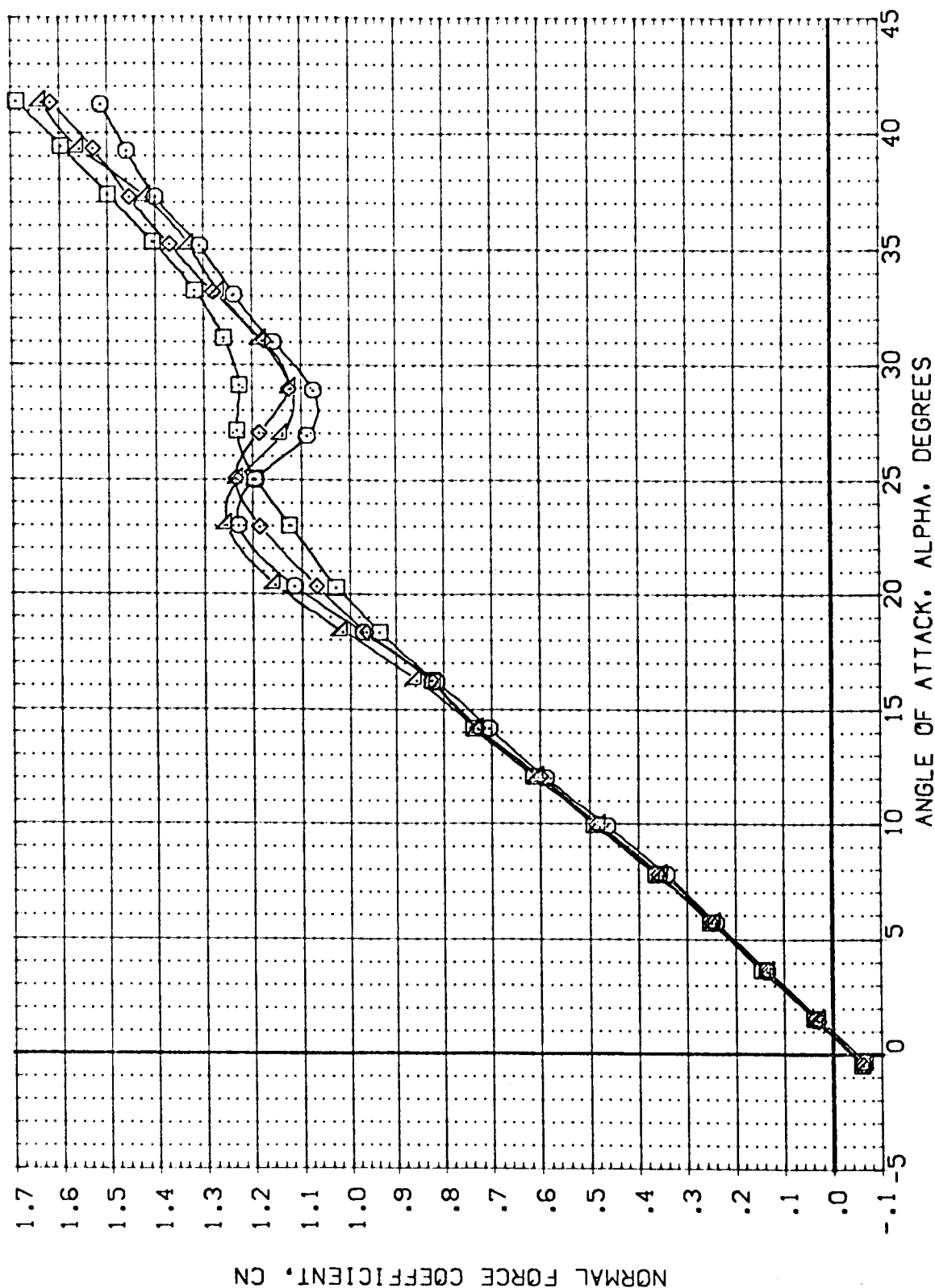


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CALMACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SP09RX	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	BREF 936.7000
(F87511)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XVRP 838.7000
(F87512)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	YVRP .0000
(F87513)		.000	.000	999.990	.000	ZVRP .0000
						SCALE .0040

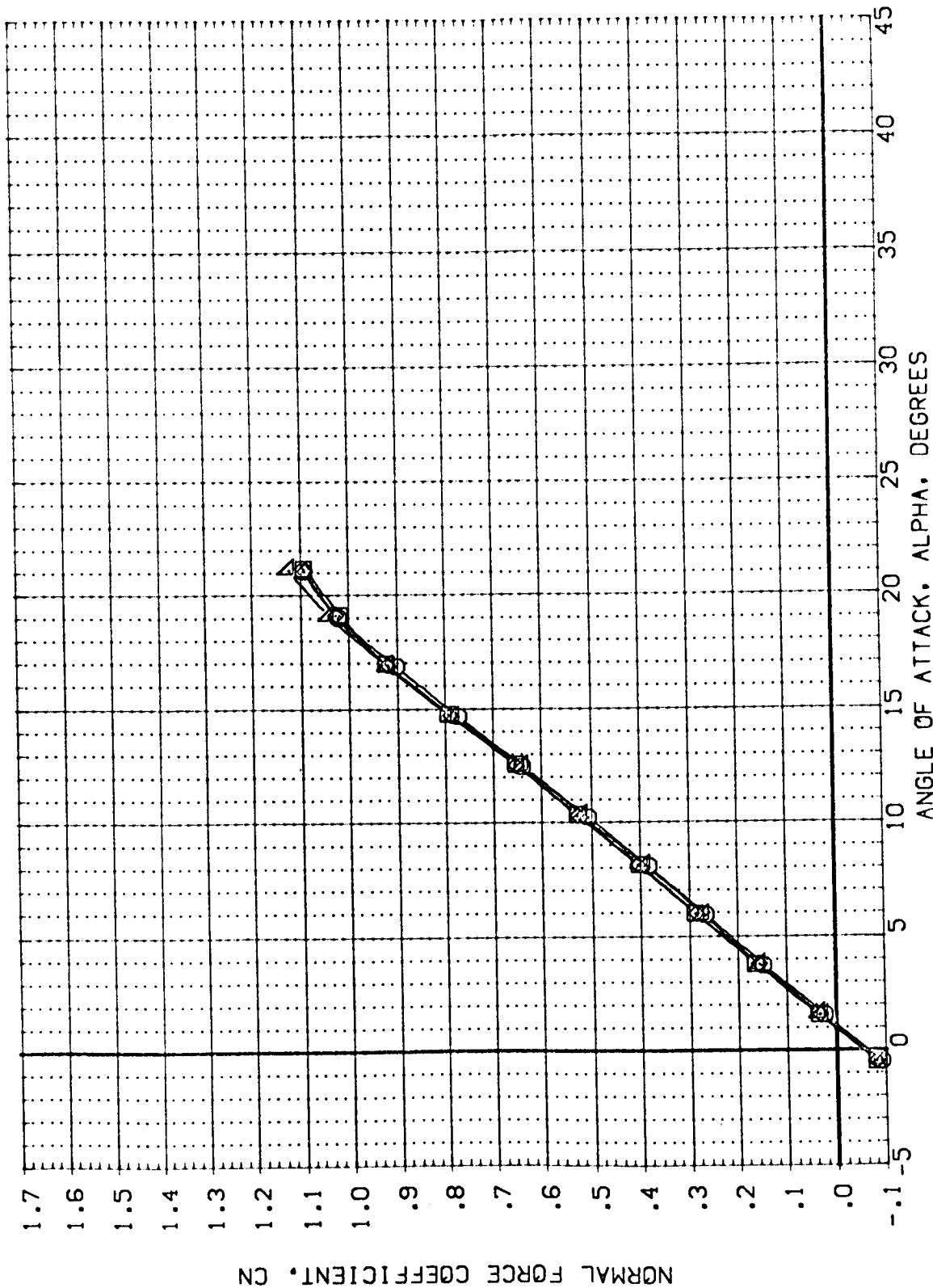


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(B)MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S28) MSFC 574(CA48) CRB 1398
 (F87S28) MSFC 574(CA48) CRB 1398 W/H19
 (F87S28) MSFC 574(CA48) CRB 1398 W/H20
 (F87S28) DATA NOT AVAILABLE
 (F87S28) MSFC 574(CA48) CRB 1398 W/H23

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 .000 999.990 .000 LREF 474.0000 .
 .000 .000 999.990 .000 BREF 936.7000 .
 .000 .000 999.990 .000 XMRP 838.0000 .
 .000 .000 999.990 .000 YMRP .0000 .
 .000 .000 999.990 .000 ZMRP .0000 .
 .000 .000 999.990 .000 SCALE .0000 .

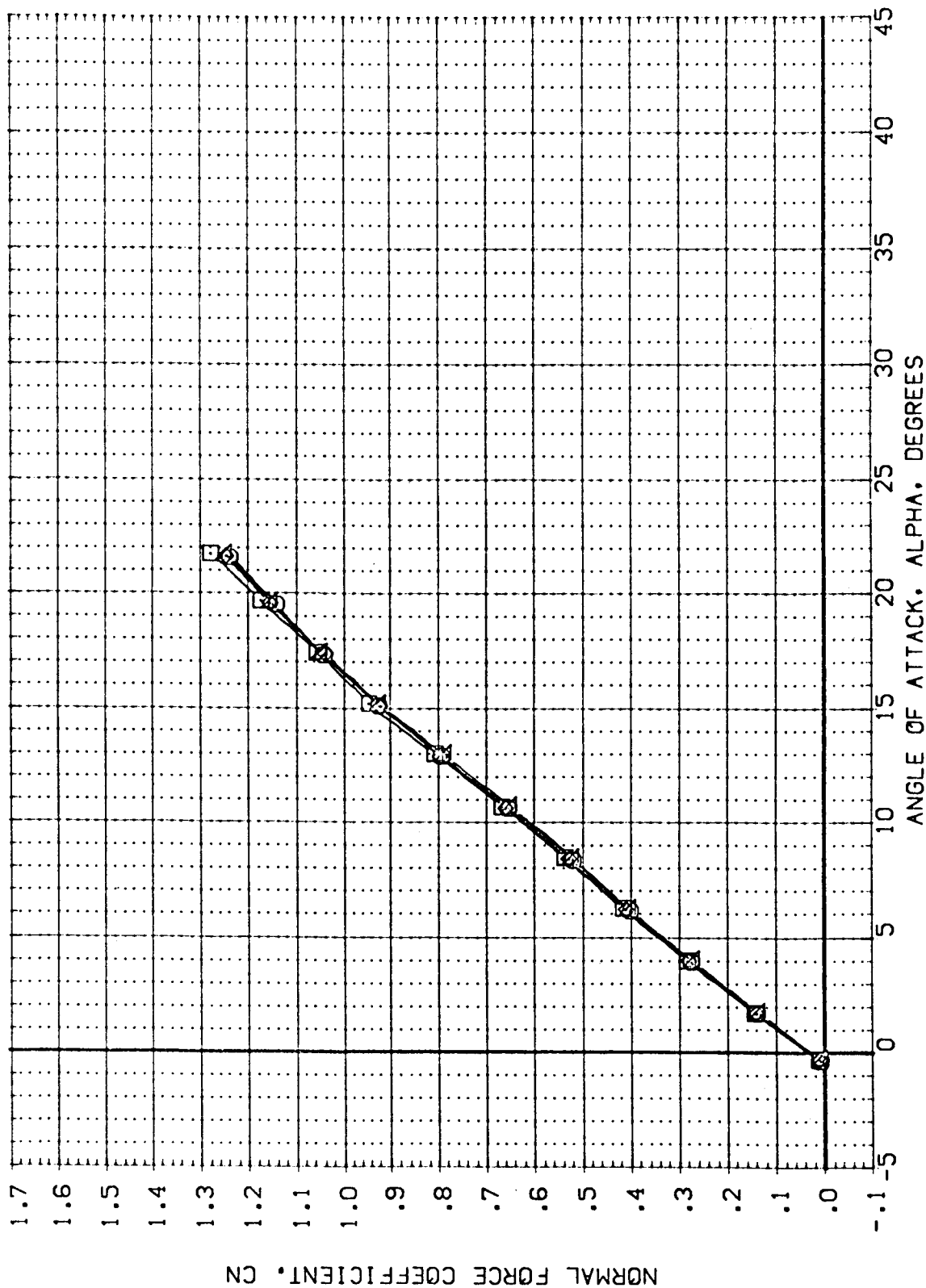


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOF LAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CR3 1393 V/H-19	.000	.000	999.990	.000	REF 2690.0000 SC.F.
(F87S85)	MSFC 574(CA48) CR3 1393 V/H-20	.000	.000	999.990	.000	REF 474.8000
(F87S91)	MSFC 574(CA48) CR3 1393 V/H-20	.000	.000	999.990	.000	REF 936.7000
(F87SC0)	DATA NOT AVAILABLE	.000	.000	999.990	.000	REF 839.7000
(F87S93)	DATA NOT AVAILABLE	.000	.000	999.990	.000	REF 7433
						SCALE .0010

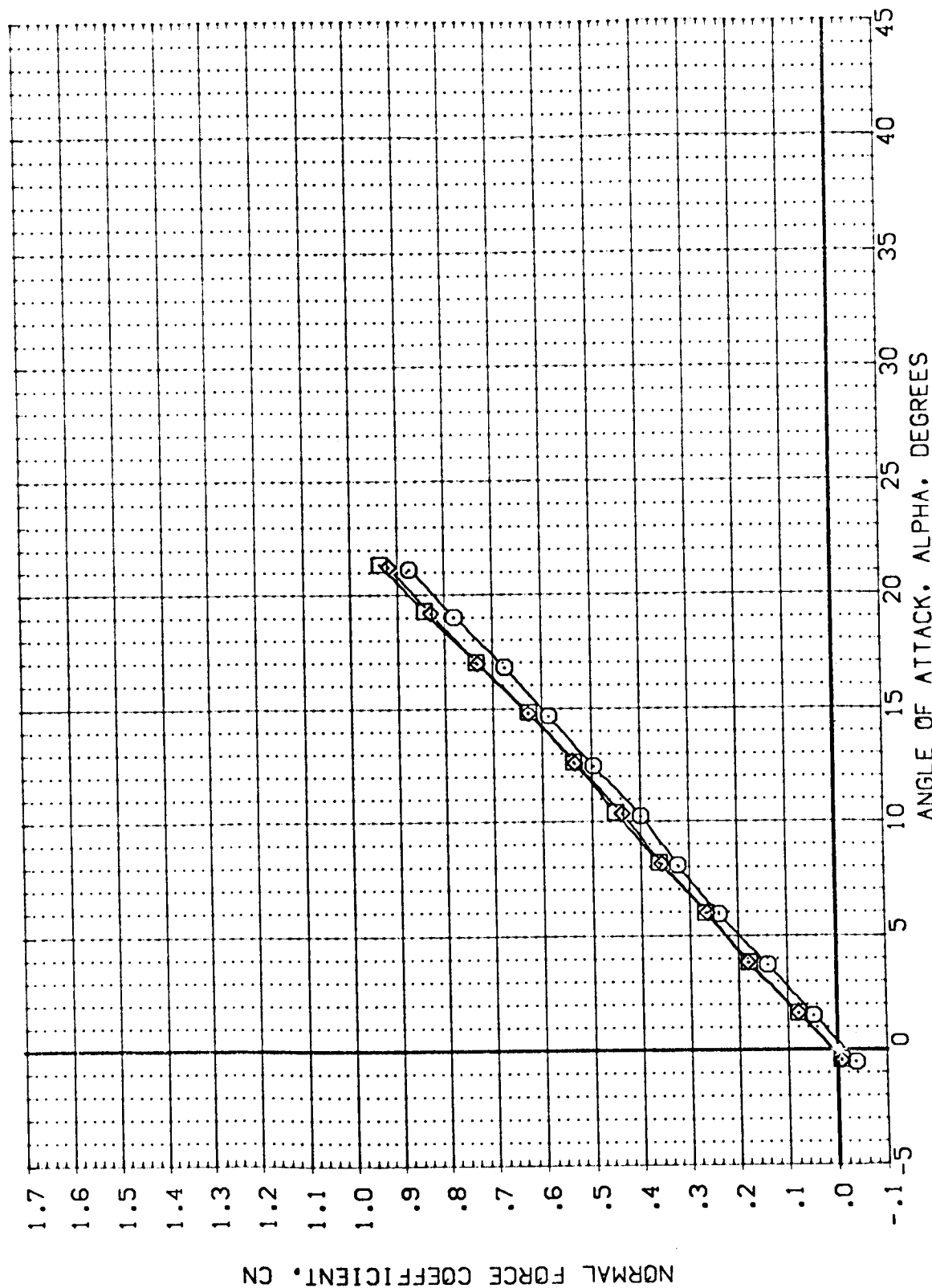


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C) VACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	LREF 474.8000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	BREF 936.7000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	XVRP 838.7000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	YVRP .0000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	ZVRP .0000
(F87S08)	W5C 574(CA48) CRB 139B	.000	.000	999.990	.000	SCALE .0000

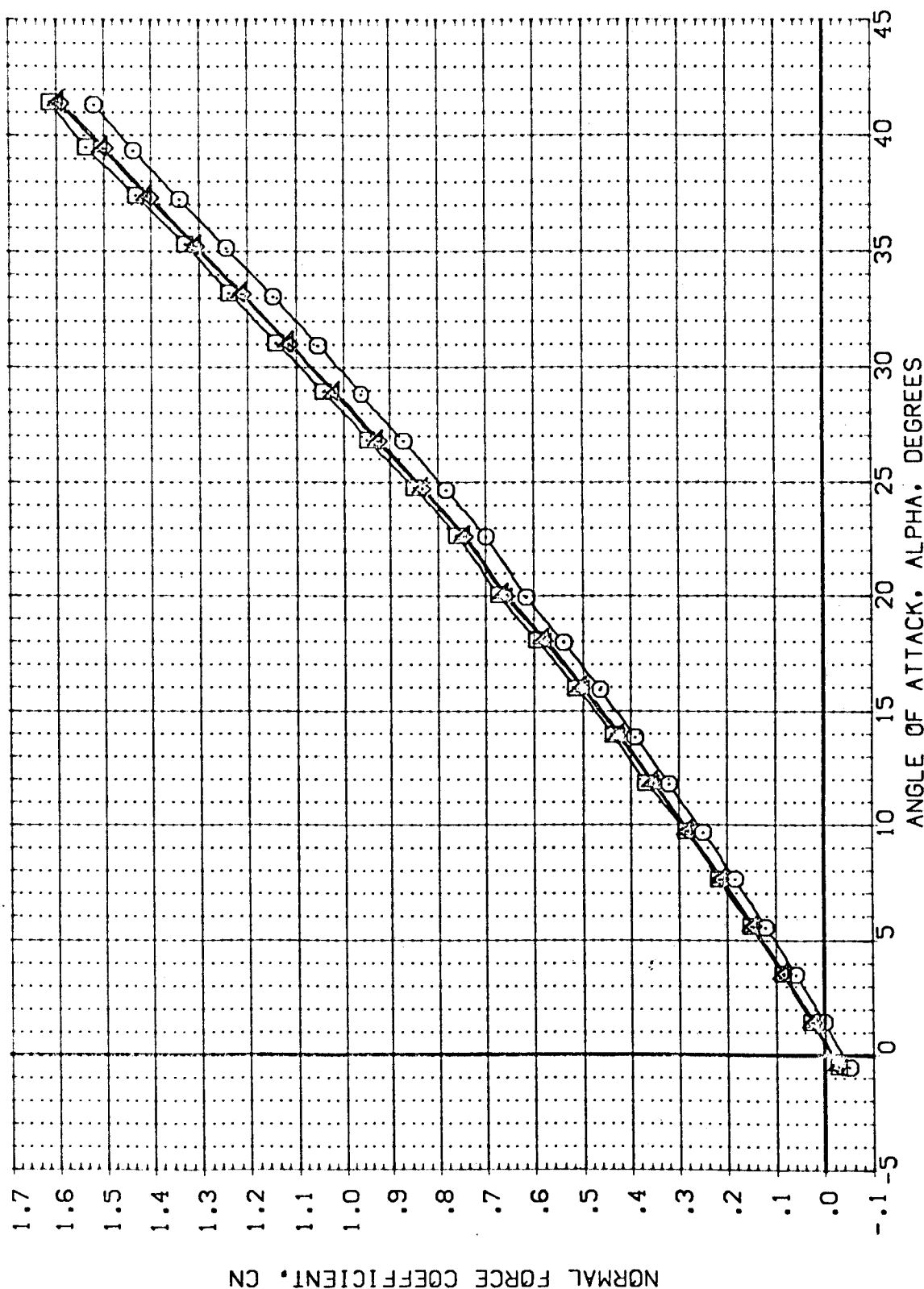


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION	SCALE
(F87S38)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000	0.0000
(F87S85)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	LREF 474.8000	0.0000
(F87S81)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	BREF 936.7000	0.0000
(F87S00)	MSFC 574(CA48) CRB 139B W/H22	.000	.000	999.990	.000	XMRP 838.0000	0.0000
(F87S33)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	YMRP 0.0000	0.0000
						ZMRP 0.0000	0.0000
						SCALE	0.0040

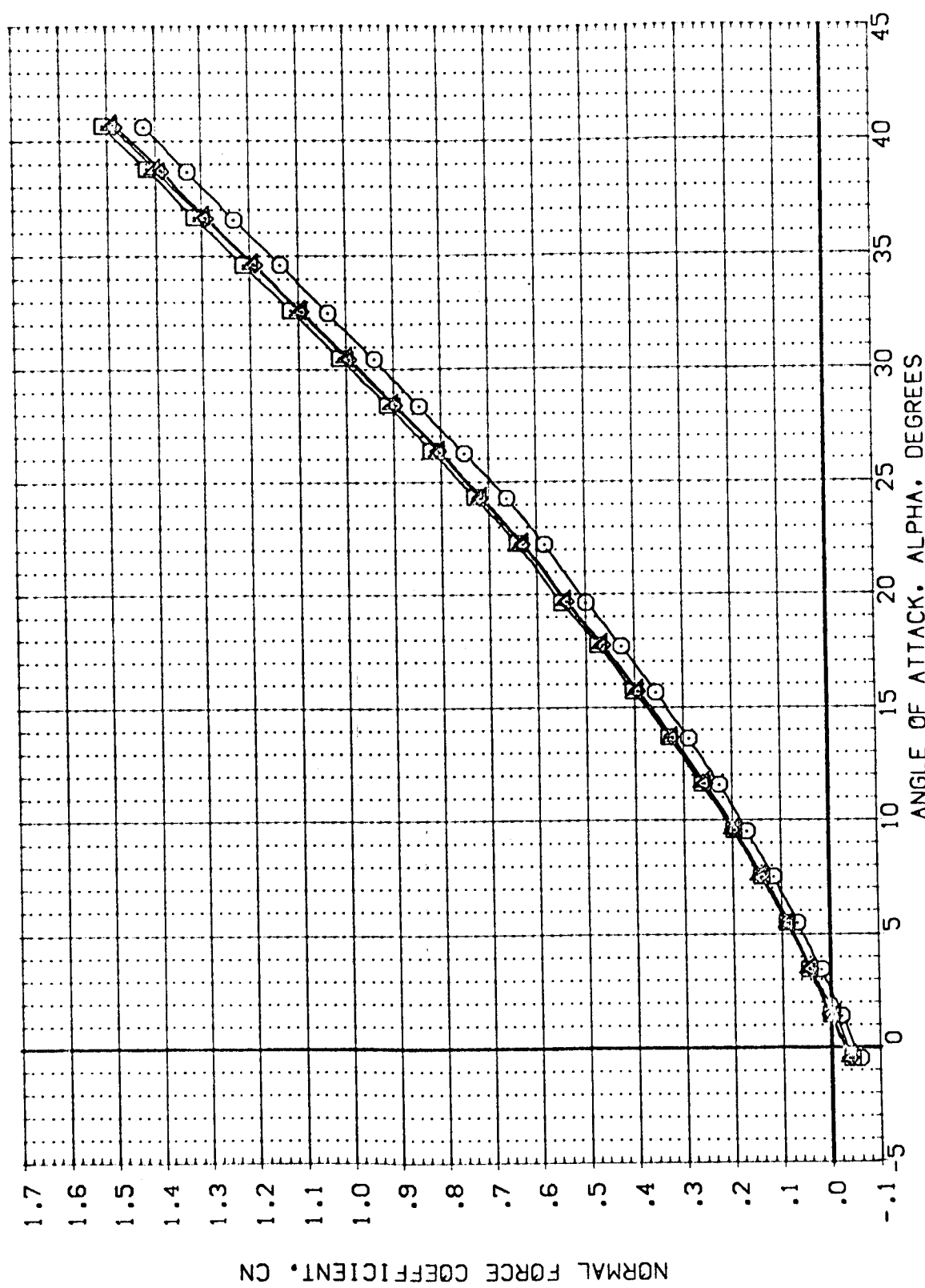


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87S09)	MSFC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S10)	MSFC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S11)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.0000
(F87S12)	MSFC 574(CA48) CRB 139B V/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

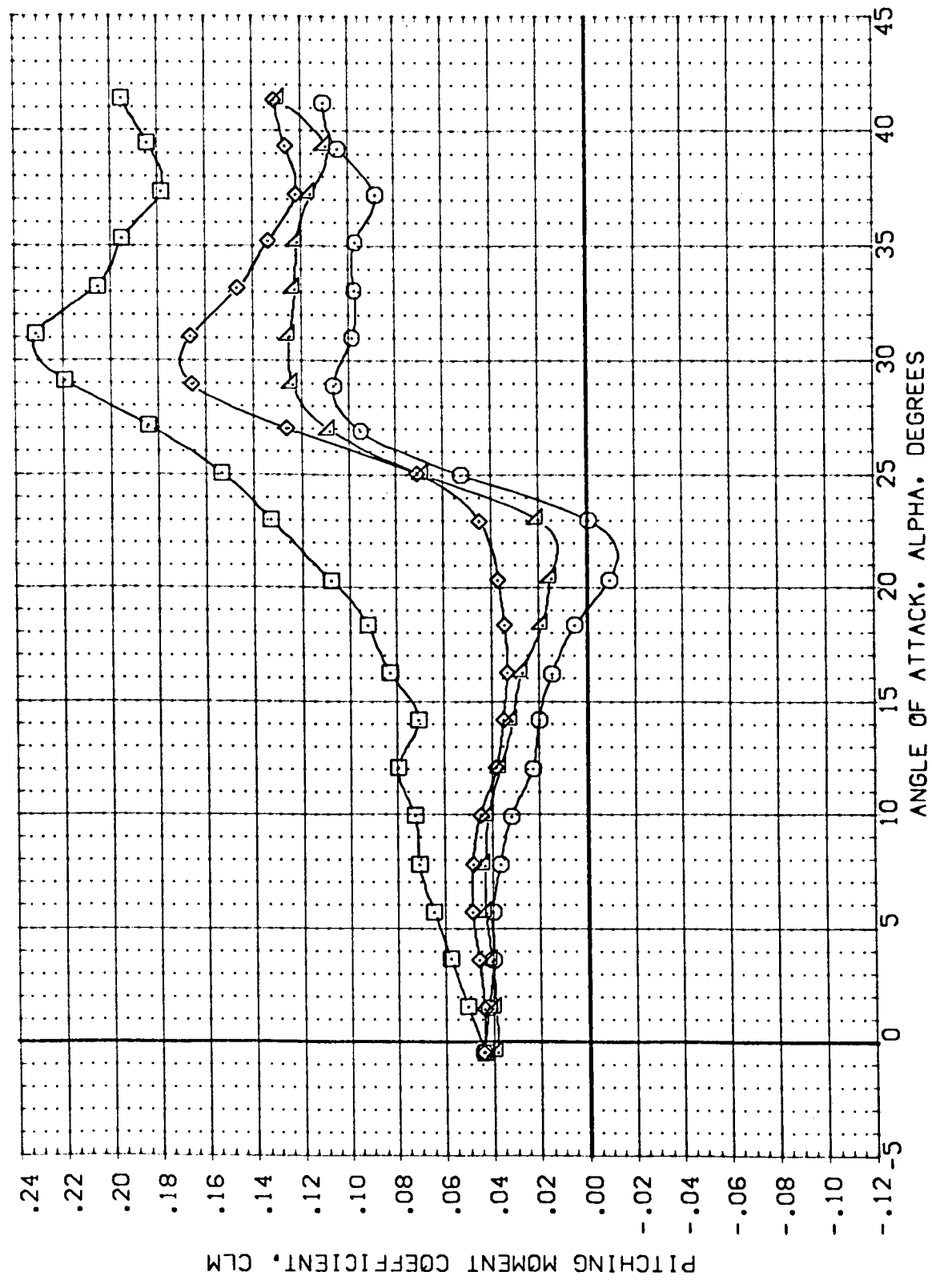


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

0-2

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCLAP	REFERENCE INFORMATION
(F87528)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87529)	MSFC 574 (CA48) CRB 1398 V/H19	.000	.000	999.990	.000	REF 474.8000
(F87530)	MSFC 574 (CA48) CRB 1398 V/H20	.000	.000	999.990	.000	REF 936.7000
(F87531)	DATA NOT AVAILABLE	.000	.000	999.990	.000	838.7000
(F87532)	MSFC 574 (CA48) CRB 1398 V/H23	.000	.000	999.990	.000	YMRP .0000
(F87533)		.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

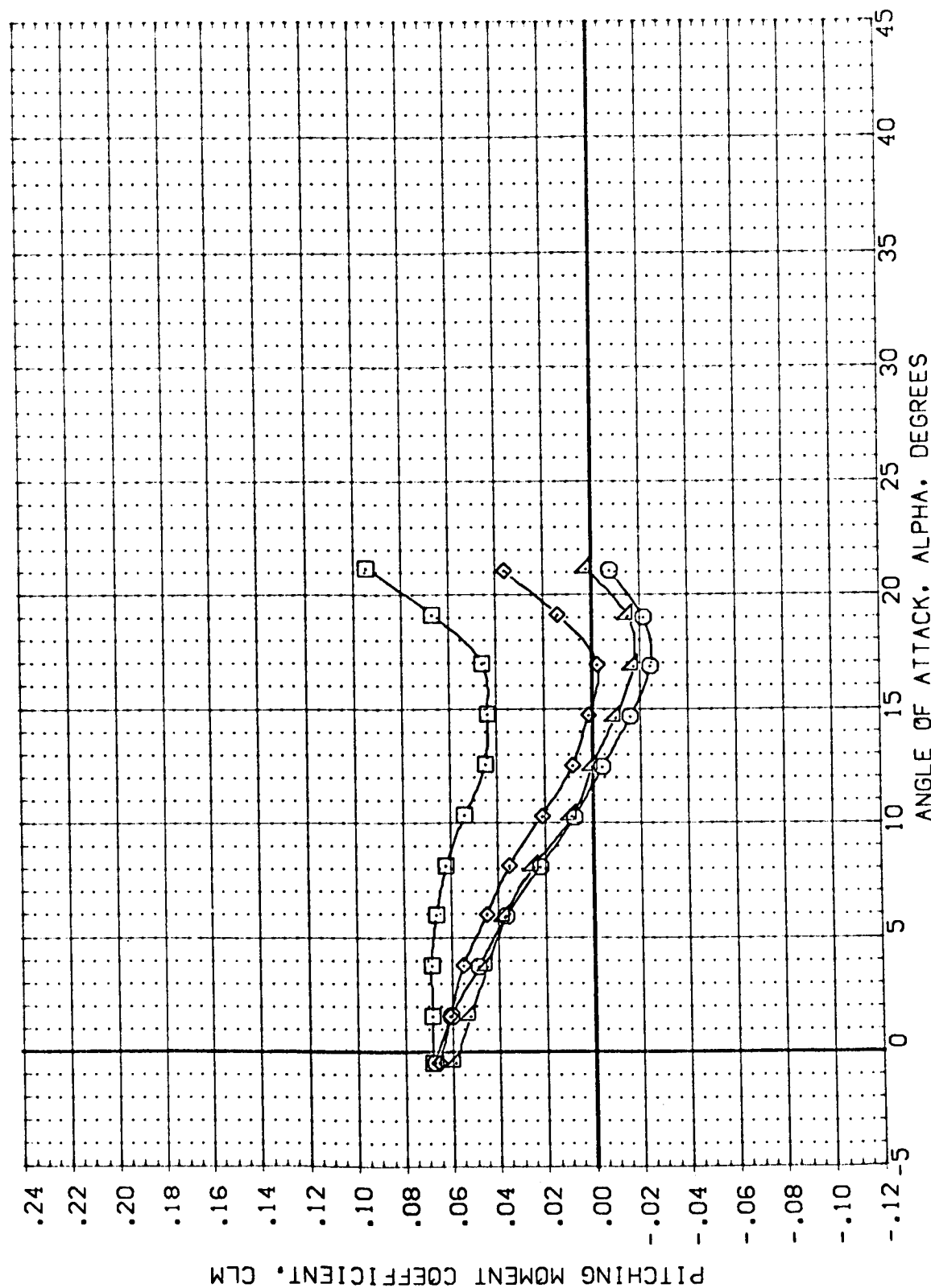


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CR8 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CR8 1399 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87593)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
	MSFC 574(CA48) CR8 1398 V/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

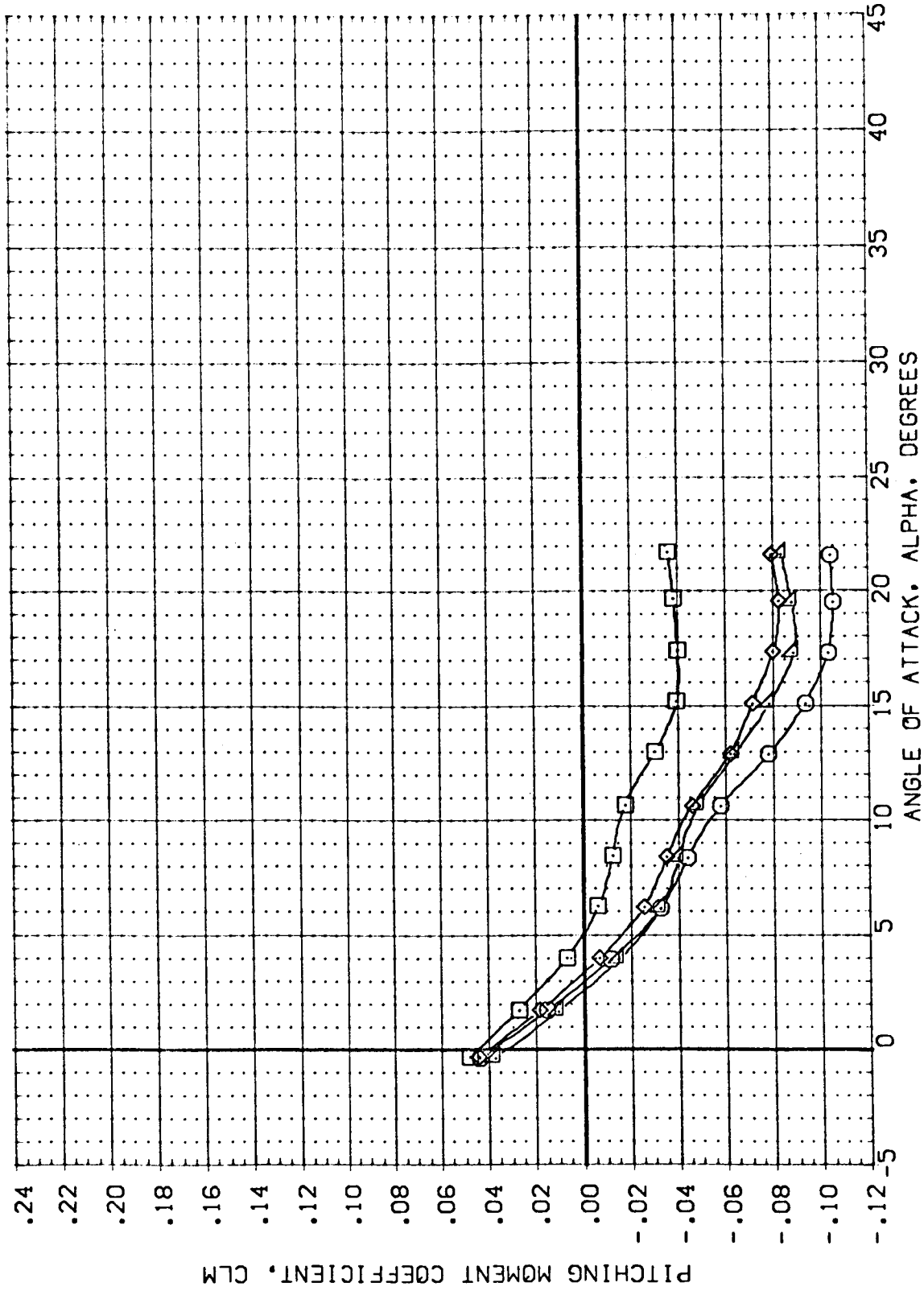


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	LREF 474.8000
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	BREF 938.7000
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	XVDP 838.7000
(F875C8)	DATA NOT AVAILABLE	.000	.000	999.990	.000	YVDP .0000
(F875C8)	DATA NOT AVAILABLE	.000	.000	999.990	.000	ZVDP .0000
(F875C8)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SCALE .0040

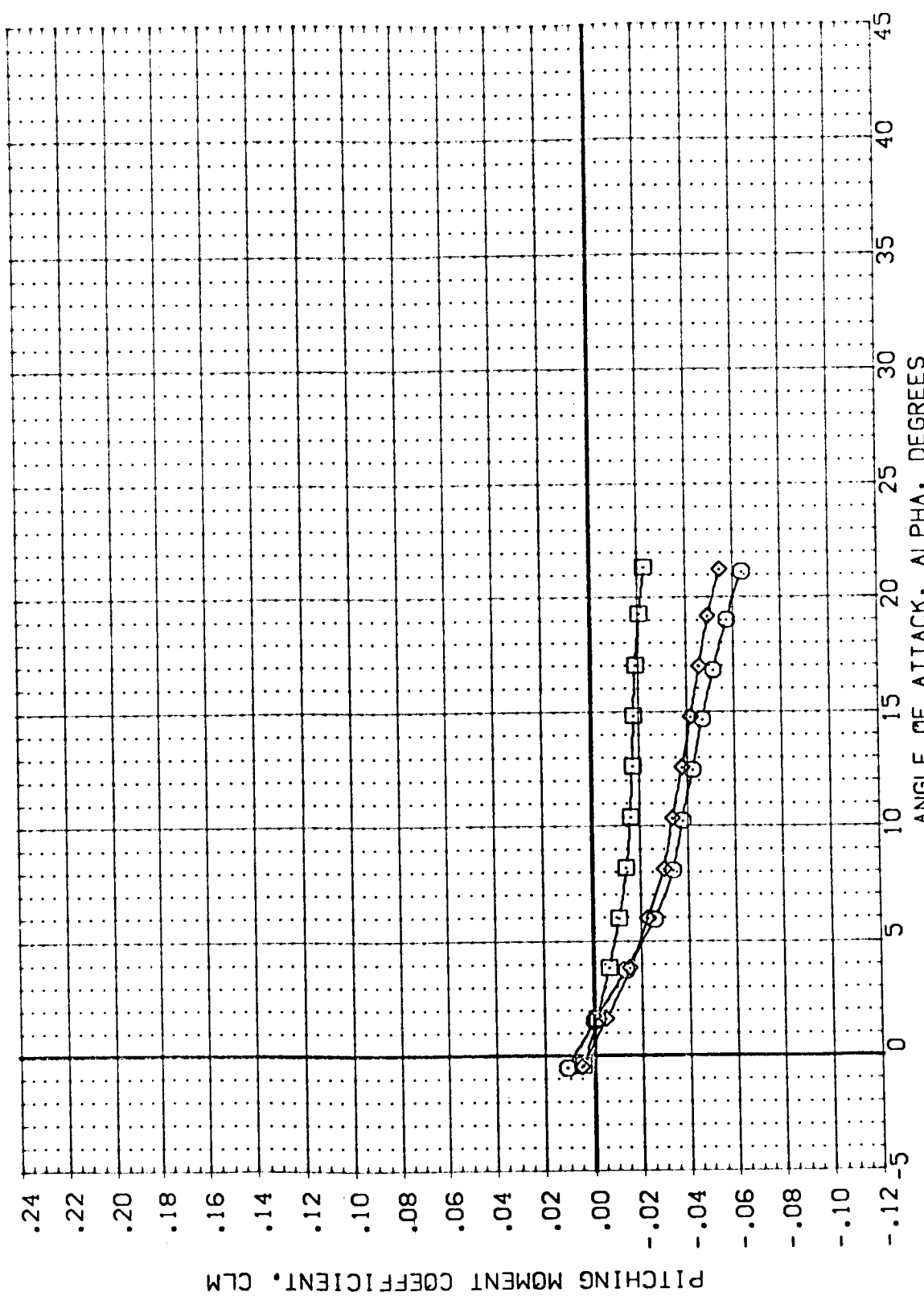


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SRFF 2690.0000
(F87585)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	SRFF 474.8000
(F87591)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	SRFF 936.7000
(F87593)	MSFC 574(CA48) CRB 139B W/H22	.000	.000	999.990	.000	SRFF 838.7000
(F87593)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	SRFF .0000
						SCALE .0040

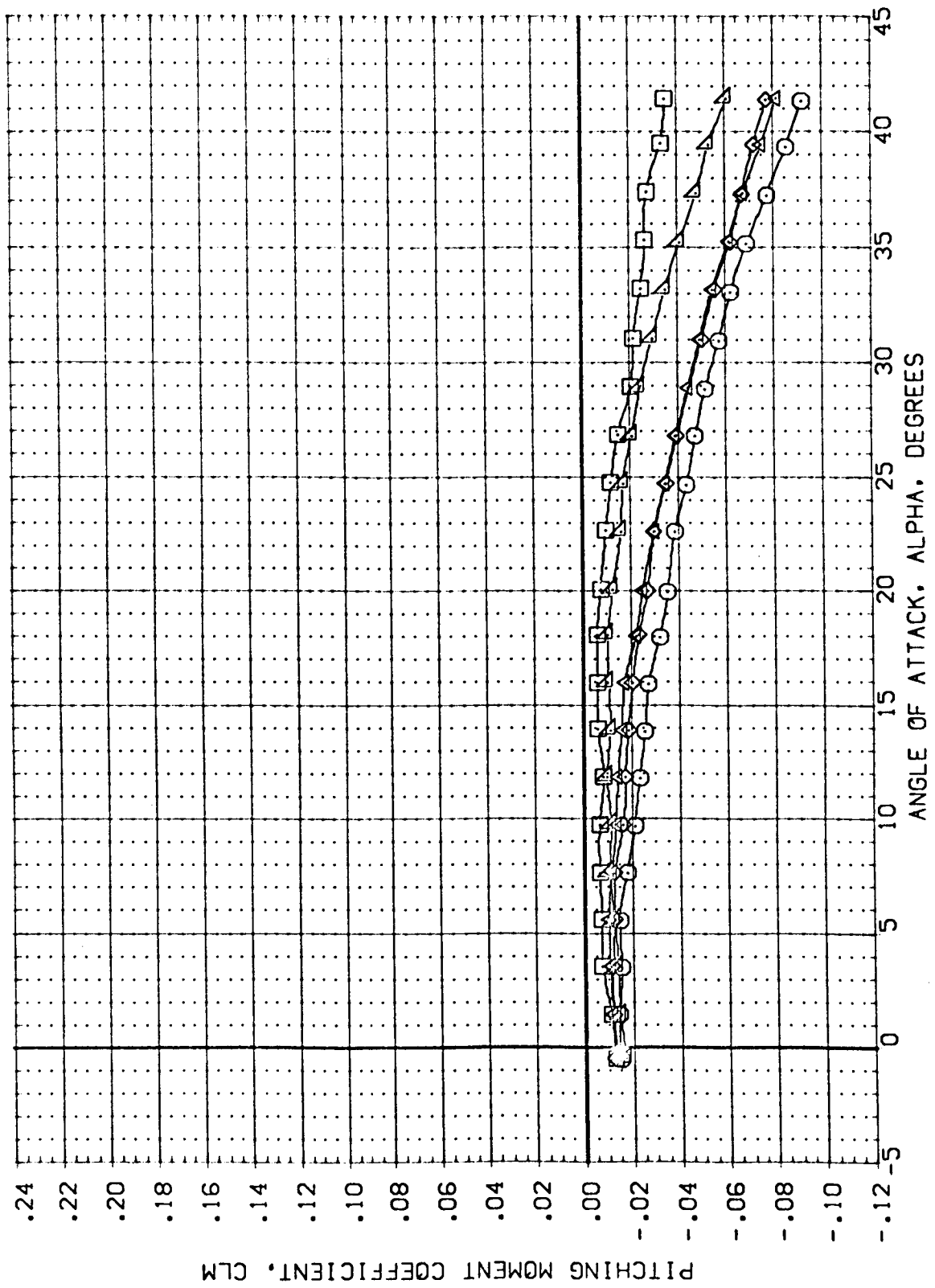


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	BREF 936.7000
(F87511)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	XREF 838.7000
(F87512)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	WREF .0000
(F87513)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	ZREF .0000
(F87514)	MSFC 574(CA48) CR8 1393	.000	.000	999.990	.000	SCALE .0040

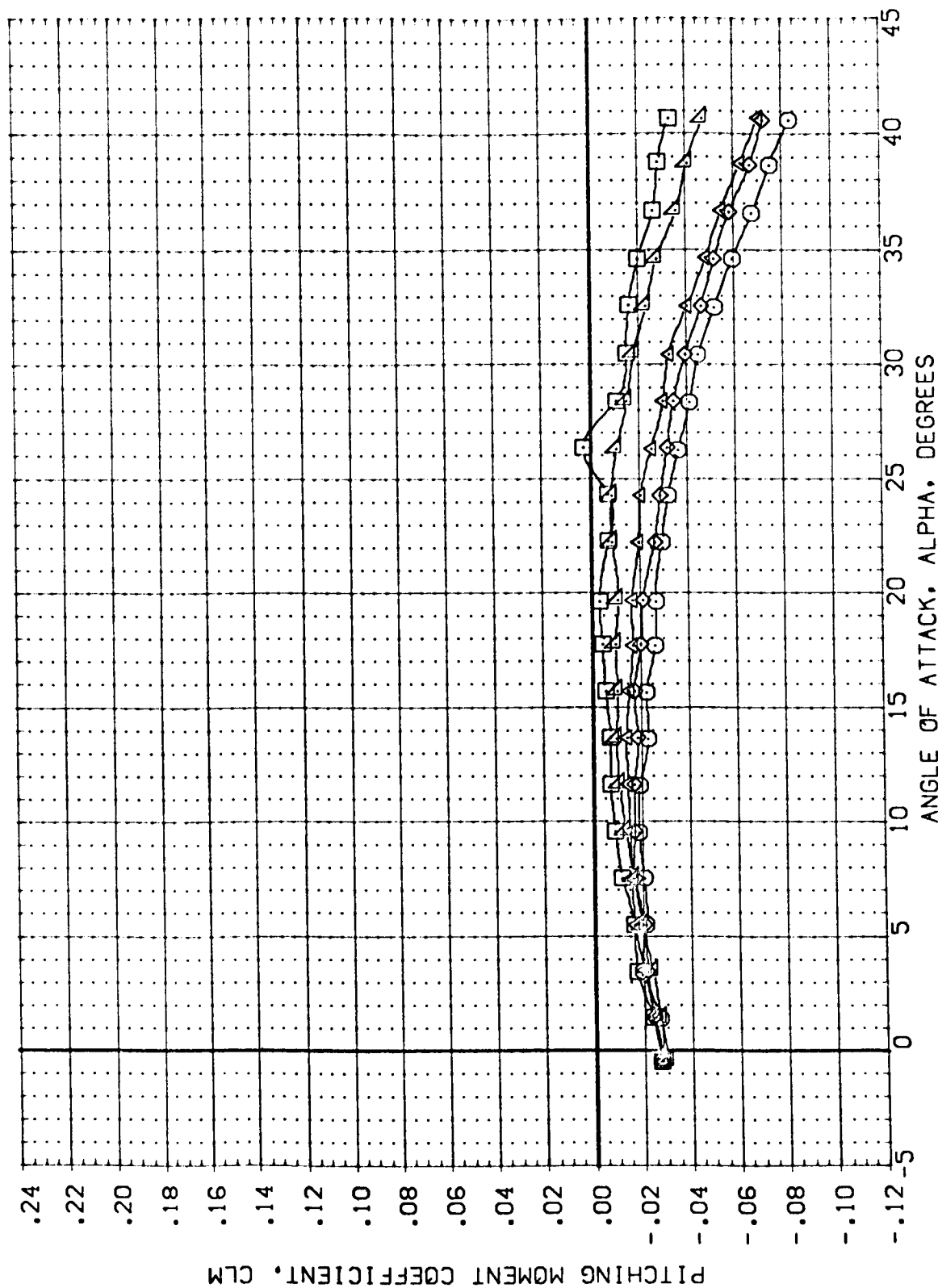


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

L L

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S28) MSFC 574(CA48) CRB 1398
 (F87S83) MSFC 574(CA48) CRB 1398 V/H19
 (F87S81) MSFC 574(CA48) CRB 1398 V/H20
 (F87S20) DATA NOT AVAILABLE
 (F87S23) MSFC 574(CA48) CRB 1398 V/H23

BETA ELEVTR SPCBRK BCF LAP REFERENCE INFORMATION
 .000 .000 .000 .000 SREF 2690.0000 SC.F.T.
 .000 .000 .000 .000 LREF 474.8000
 .000 .000 .000 .000 BREF 936.7000
 .000 .000 .000 .000 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

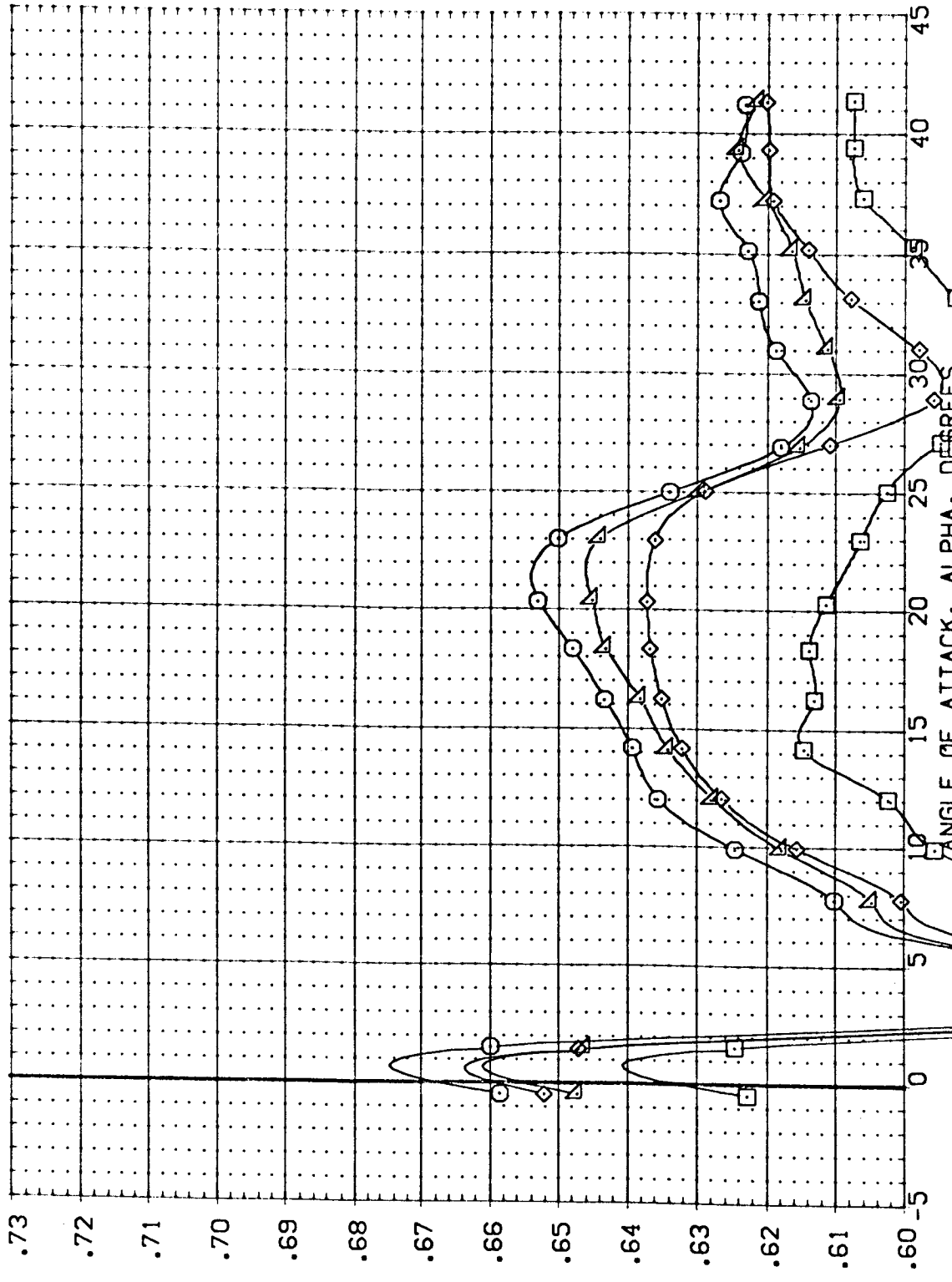


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOCK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S85)	MSFC 574(CA48) CRB 393 V/H-19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 393 V/H-20	.000	.000	999.990	.000	BREF 936.7000
(F87SC0)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 838.7000
(F87S93)	MSFC 574(CA48) CRB 393 V/H-23	.000	.000	999.990	.000	YREF 936.7000
					.000	ZREF 936.7000
					.000	SCALE .0000

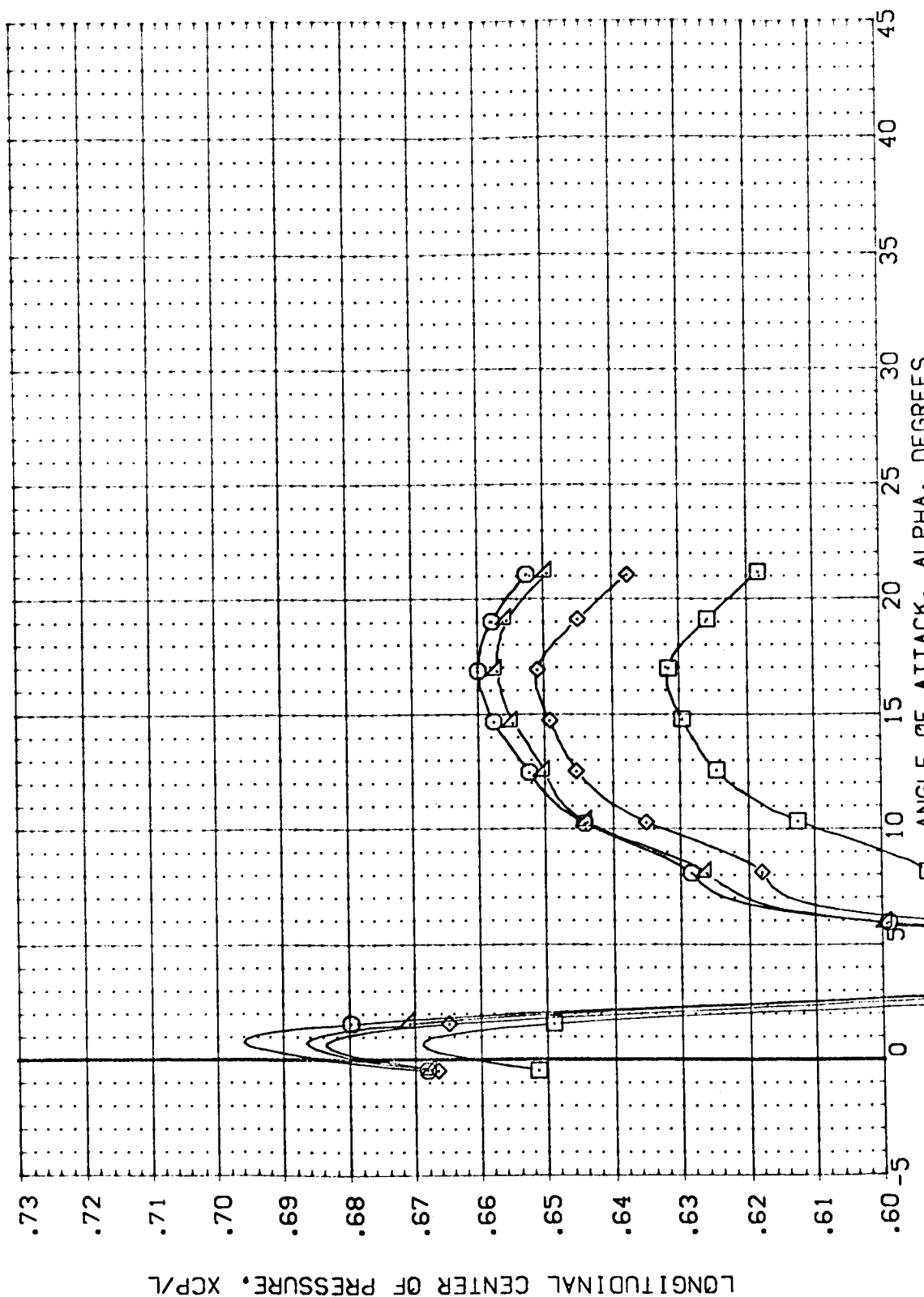


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(3)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	UREF 4774.8000
(F87510)	MSFC 574(CA48) CRB 1398 W/H19	.000	.000	999.990	.000	UREF 936.7000
(F87511)	MSFC 574(CA48) CRB 1398 W/H20	.000	.000	999.990	.000	UREF 838.7000
(F87512)	DATA NOT AVAILABLE	.000	.000	999.990	.000	UREF 936.7000
(F87513)	MSFC 574(CA48) CRB 1398 W/H23	.000	.000	999.990	.000	UREF 936.7000
						SCALE 0.040

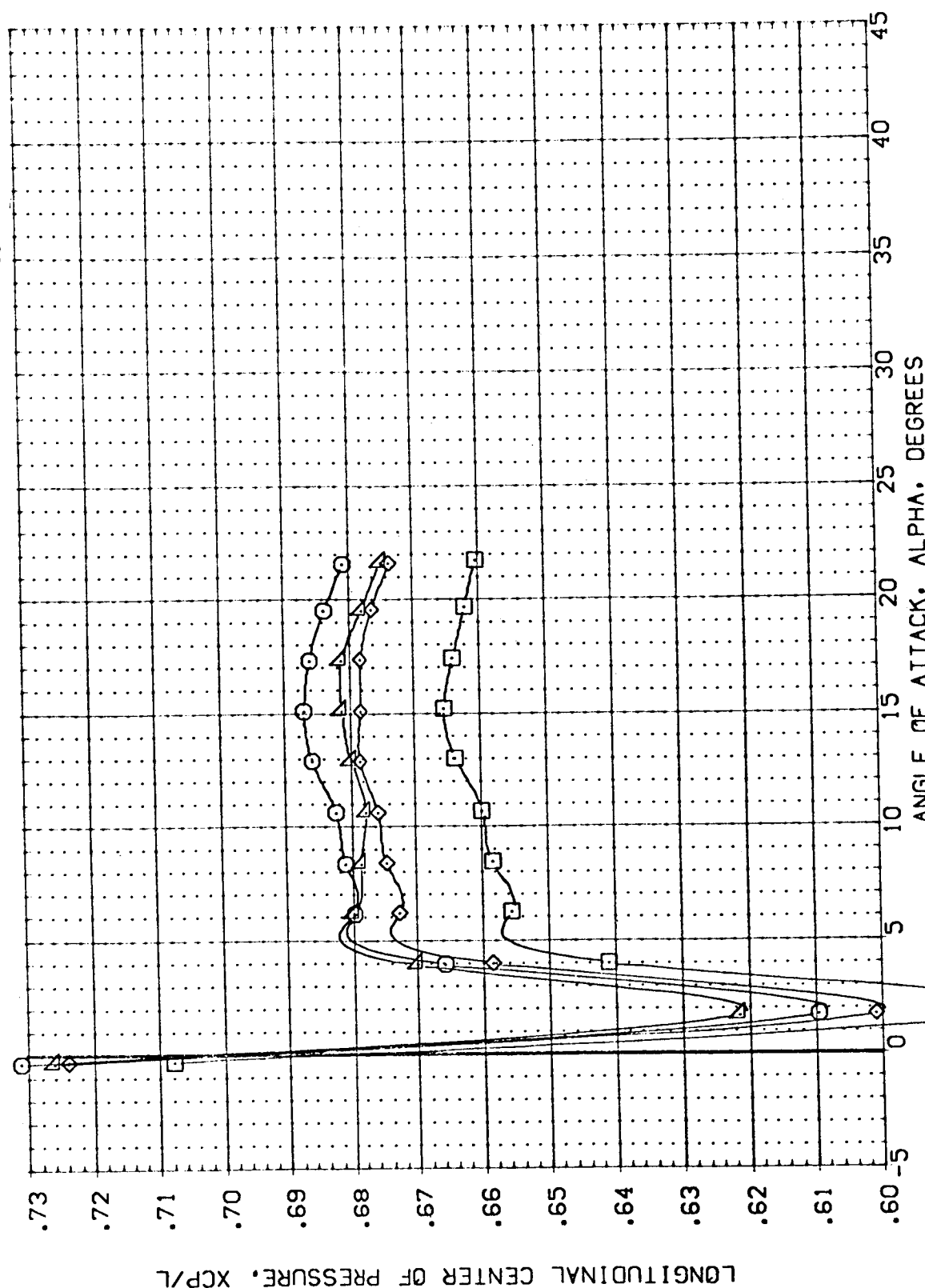


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(C)MACH = 1.20

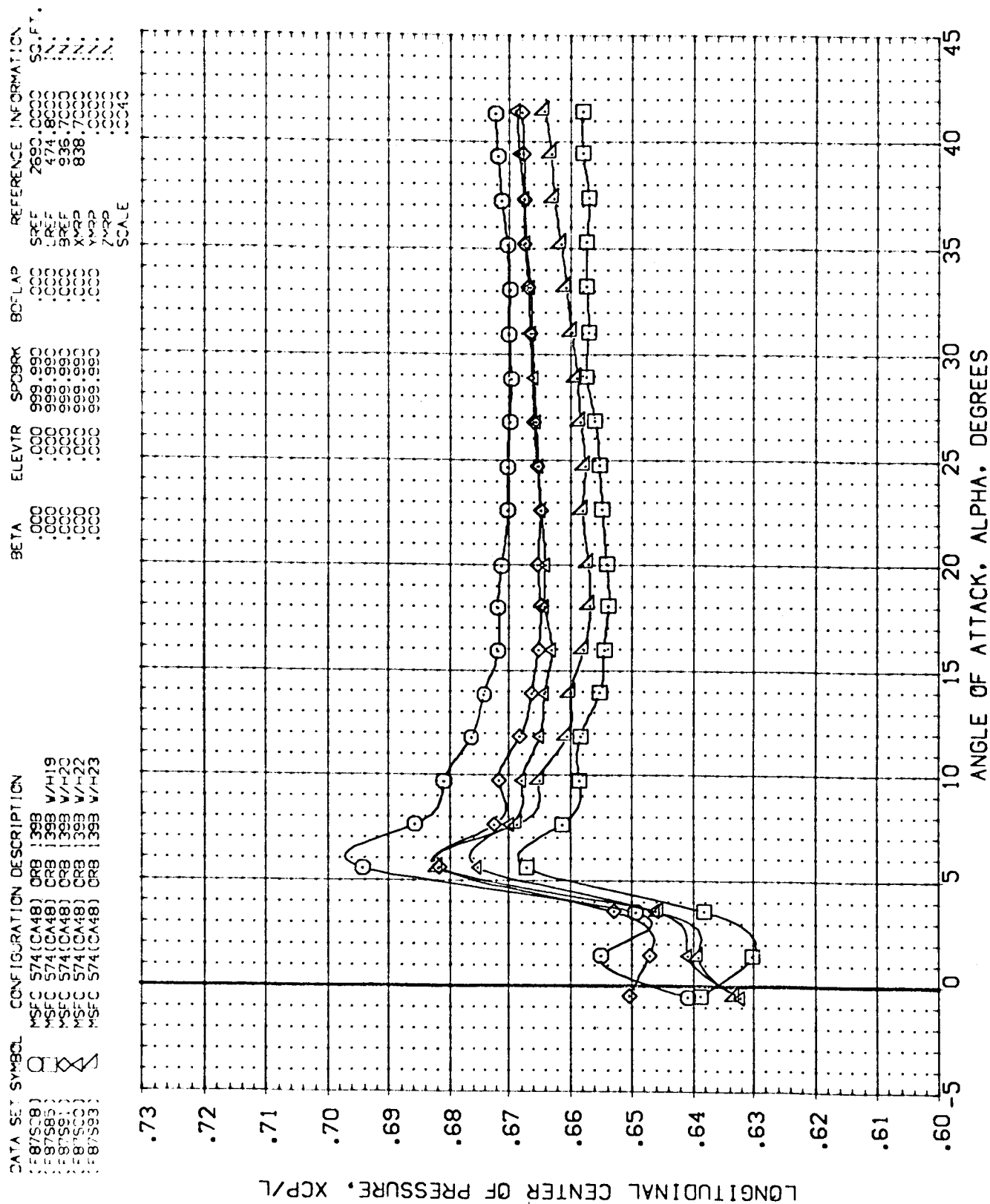


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

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CEMACH = 2.99
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DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F875C8)	MSFC 574(CA48)	CR3	393	V/H19
(F875B5)	MSFC 574(CA48)	CR3	393	V/H20
(F875B1)	MSFC 574(CA48)	CR3	393	V/H22
(F875C0)	MSFC 574(CA48)	CR3	393	V/H23
(F875B3)	MSFC 574(CA48)	CR3	393	V/H23

BETA

.000	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
.000	.000	999.990	.000	SPREF 2690.0000
.000	.000	999.990	.000	LPREF 474.8000
.000	.000	999.990	.000	BPREF 936.7000
.000	.000	999.990	.000	XMRP 838.7000
.000	.000	999.990	.000	YMRP .0000
.000	.000	999.990	.000	ZMRP .0000
.000	.000	999.990	.000	SCALE .0040

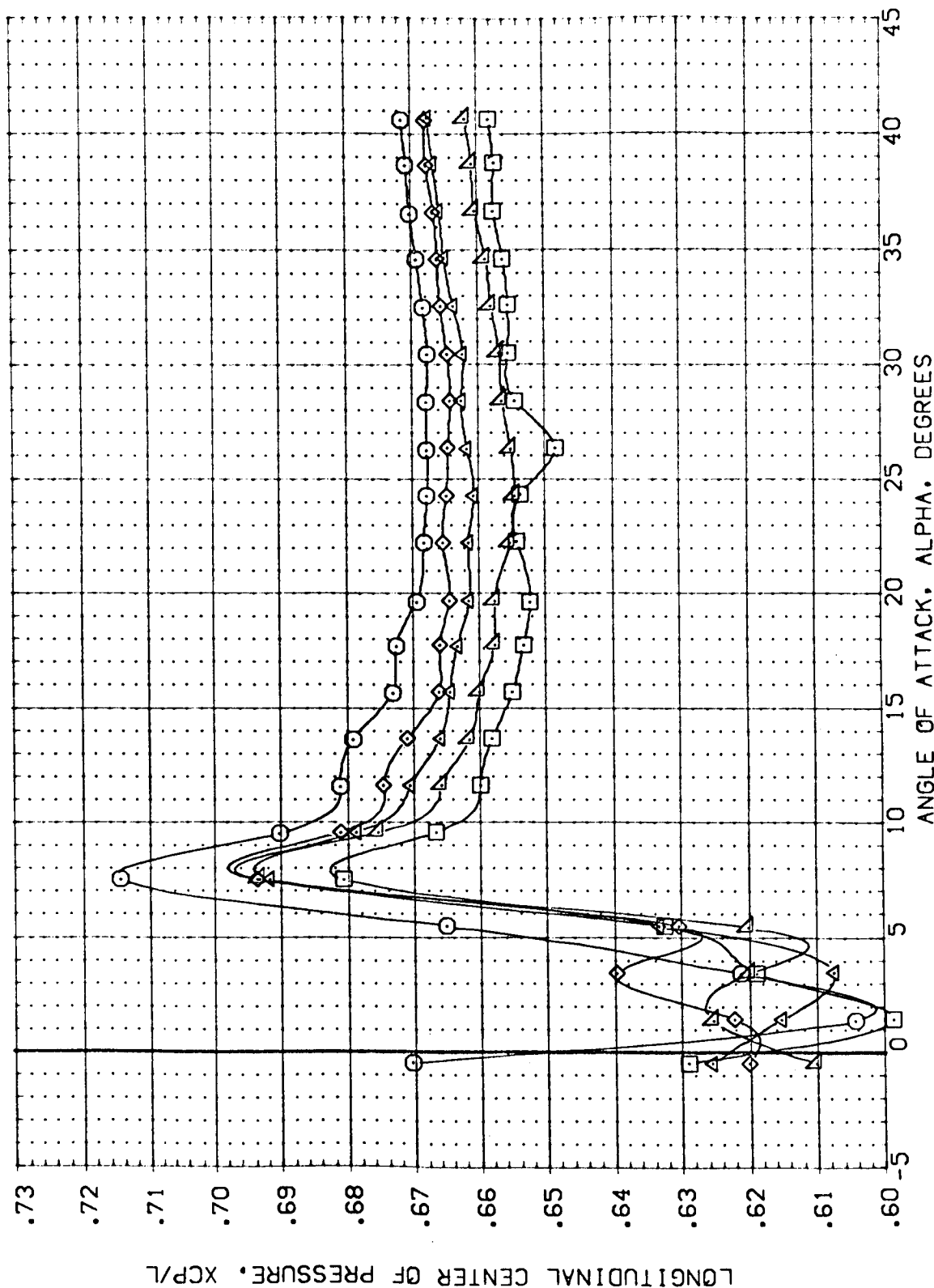


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CEFMACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F875C8) MSFC 574(CA48) CRB 1398
 (F87585) MSFC 574(CA48) CRB 1399 V/H19
 (F87591) MSFC 574(CA48) CRB 1399 V/H20
 (F87593) DATA NOT AVAILABLE
 (F87593) MSFC 574(CA48) CRB 1399 V/H23

BETA ELEVTR SPC99K BCF LAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0010

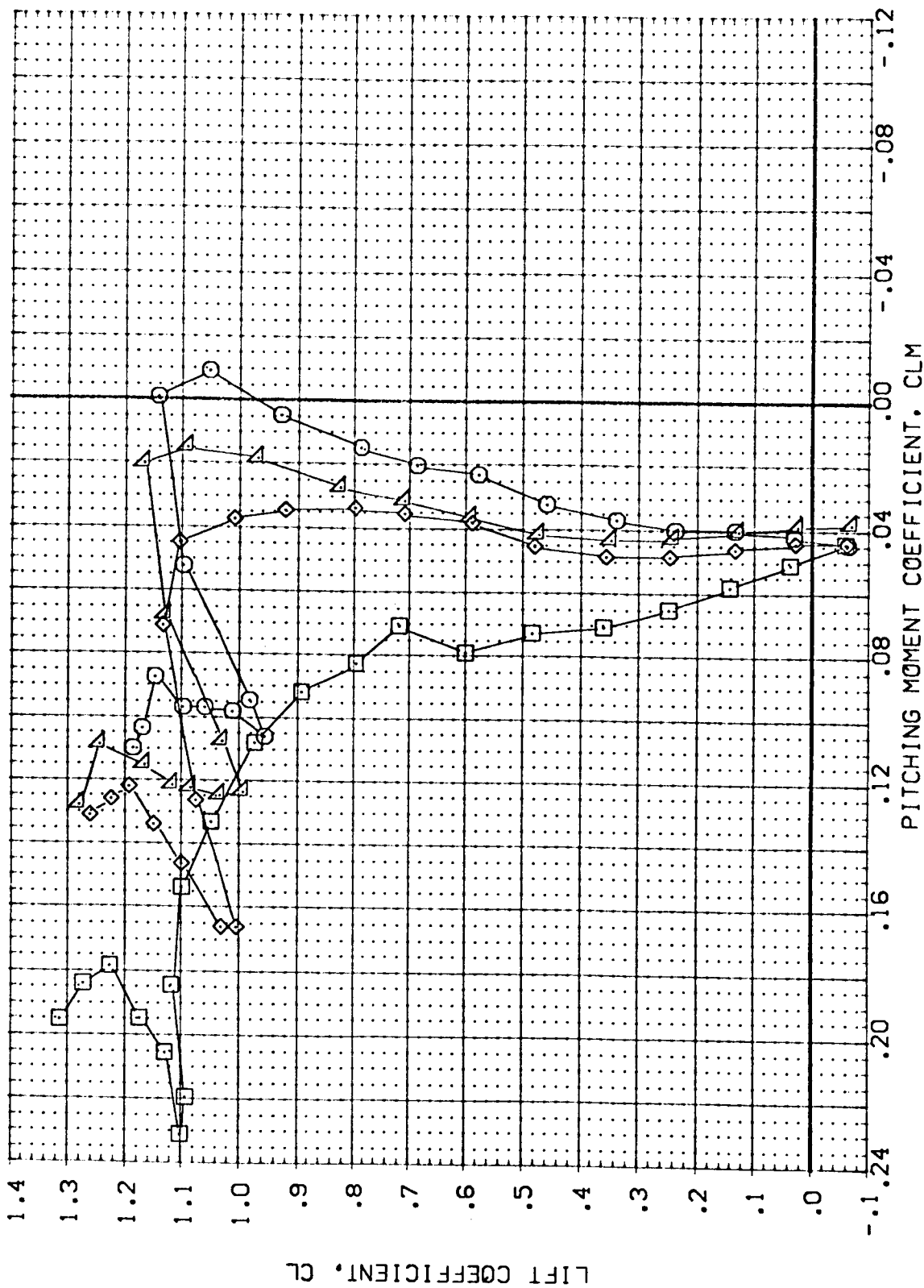


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(MACH = .60

BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE	SCALE
.000	.000	.999	.000	2600	.000
.000	.000	.999	.000	474	.000
.000	.000	.999	.000	836	.000
.000	.000	.999	.000	838	.000
.000	.000	.999	.000	X333	.000
.000	.000	.999	.000	X333	.000
.000	.000	.999	.000	Z333	.000
.000	.000	.999	.000	SCALE	.000

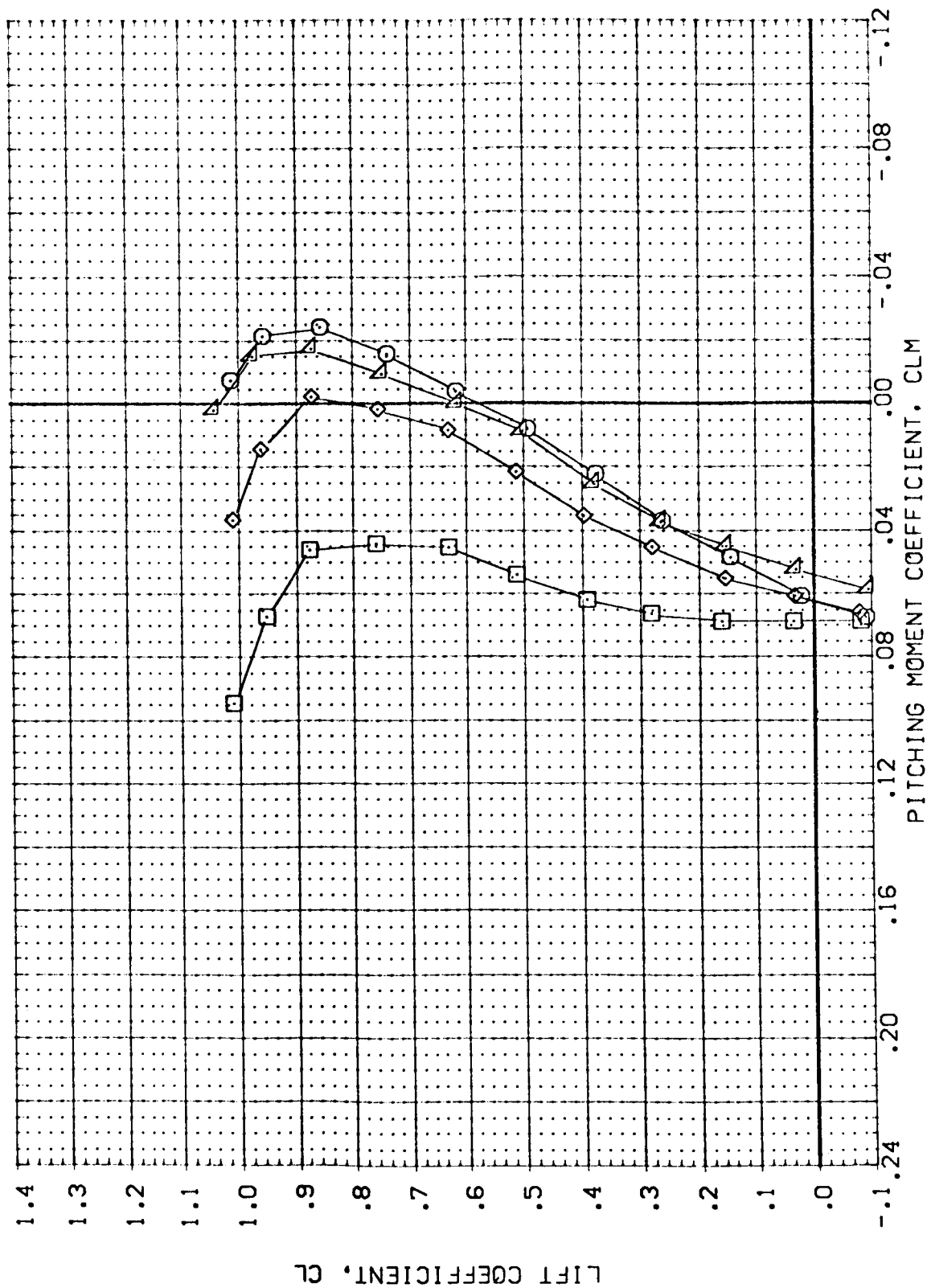


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

$$[B]_{MACH} = .89$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87508) MSFC 574(OA48) CRB 1398

(F87585) MSFC 574(OA48) CRB 1398 V/H:9

(F87591) MSFC 574(OA48) CRB 1398 V/H:20

(F87593) DATA NOT AVAILABLE

(F87593) MSFC 574(OA48) CRB 1398 V/H:23

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.

.000 .000 999.990 .000 LREF 474.8000 IN.

.000 .000 999.990 .000 BREF 936.7000 IN.

.000 .000 999.990 .000 XMRP 838.7000 IN.

.000 .000 999.990 .000 YMRP .0000 IN.

.000 .000 999.990 .000 ZMRP .0000 IN.

SCALE .0040

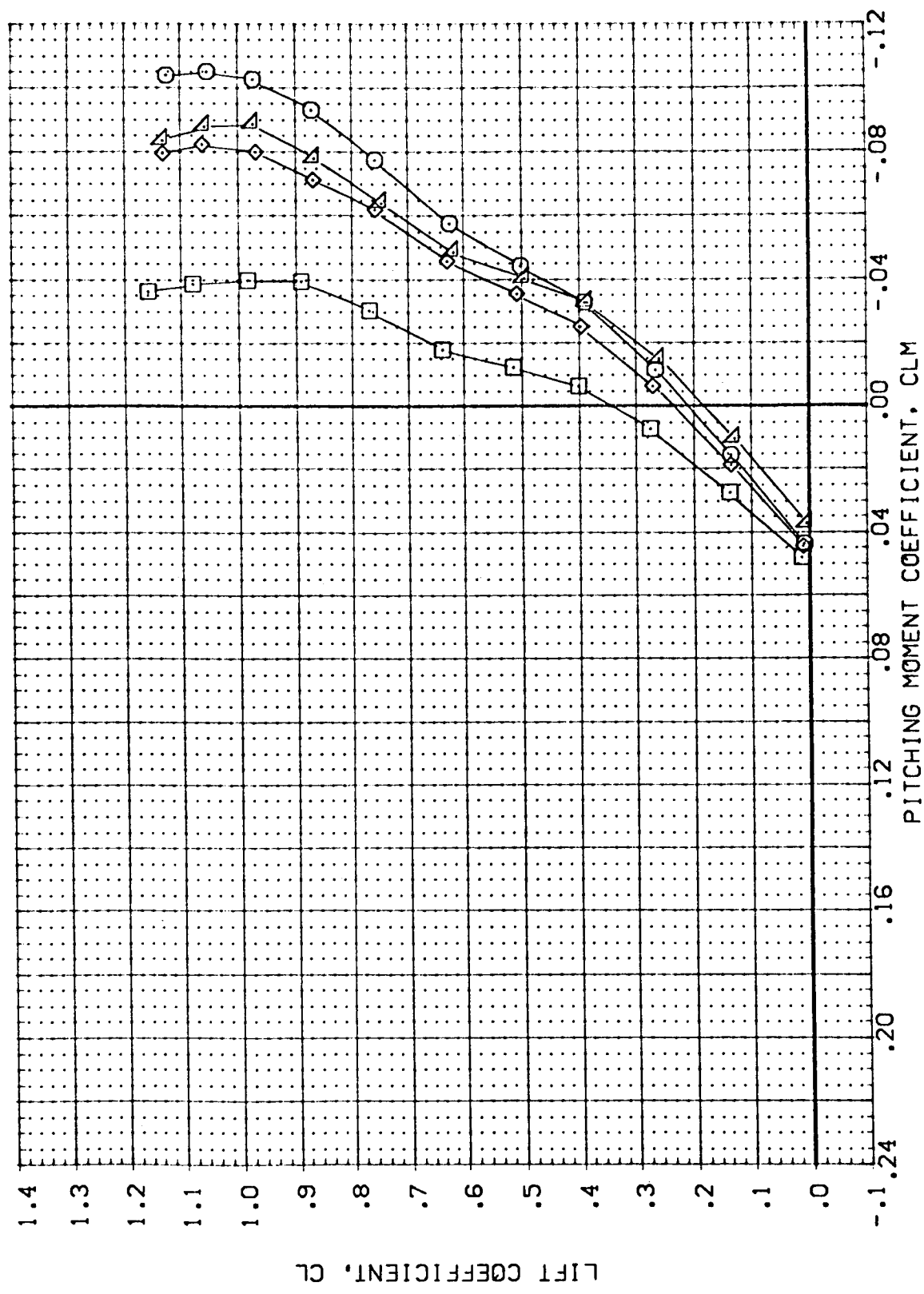


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CR3 : 398 W/H19	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CR3 : 398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CR3 : 398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87590)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 838.7000
(F87593)	DATA NOT AVAILABLE	.000	.000	999.990	.000	YREF .0000
		.000	.000	999.990	.000	ZREF .0000
		.000	.000	999.990	.000	SCALE .0040

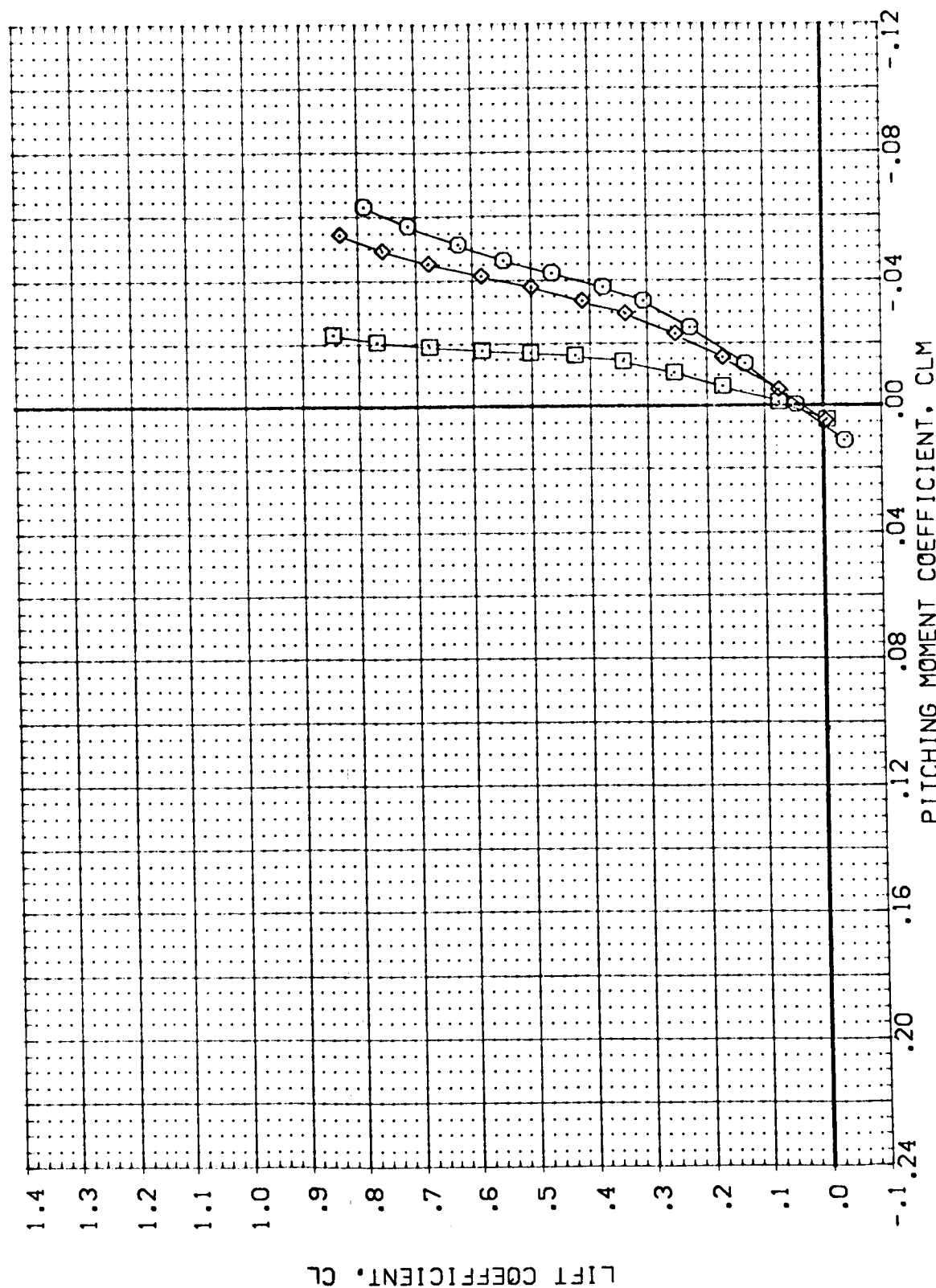
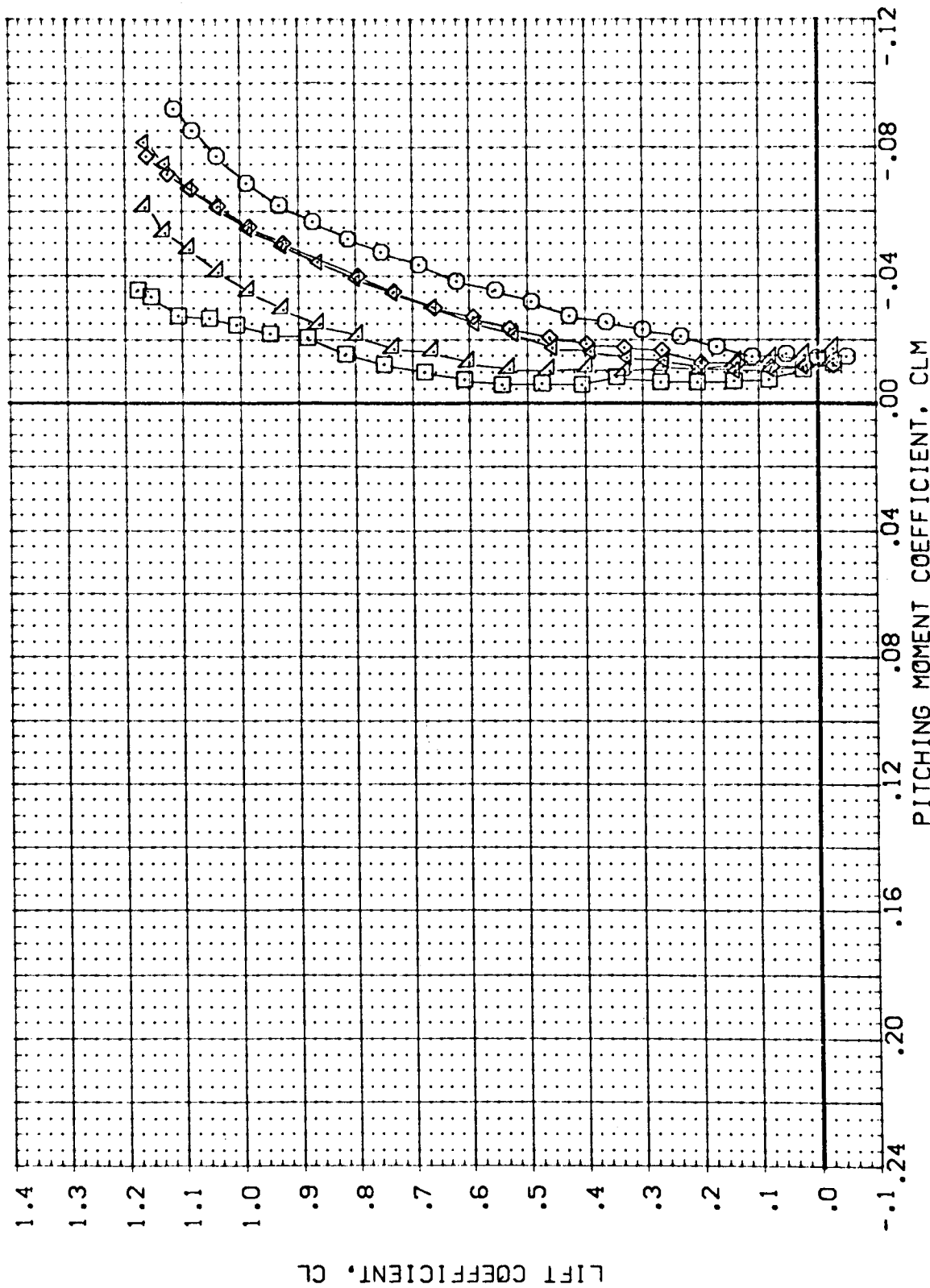


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(O)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	XREF 936.7000
(F87511)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	YREF 838.7000
(F87512)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	ZREF .0000
(F87513)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SCALE .0040



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CR3 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87S05)	MSFC 574(CA48) CR3 1398 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S01)	MSFC 574(CA48) CR3 1398 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	MSFC 574(CA48) CR3 1398 V/H22	.000	.000	999.990	.000	XREF 838.7000
(F87S03)	MSFC 574(CA48) CR3 1398 V/H23	.000	.000	999.990	.000	YREF .0000
					.000	ZREF .0000
					.000	SCALE .0040

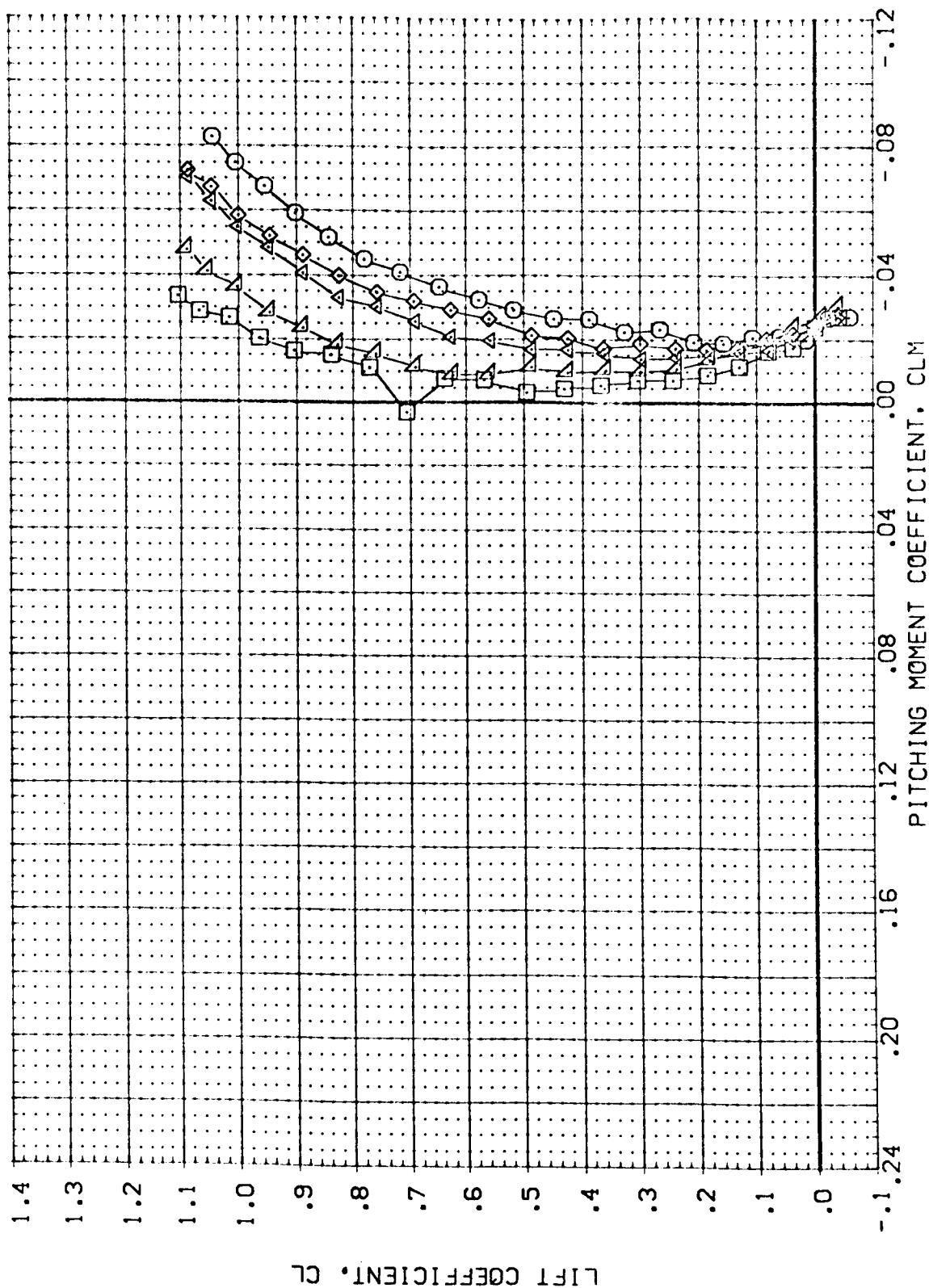


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87598)	MSFC 574(CA48) CR3 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87599)	MSFC 574(CA48) CR3 139B W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87600)	MSFC 574(CA48) CR3 139B W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87601)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87602)	MSFC 574(CA48) CR3 139B W/H23	.000	.000	999.990	.000	YMRP .0000
						SCALE .0040

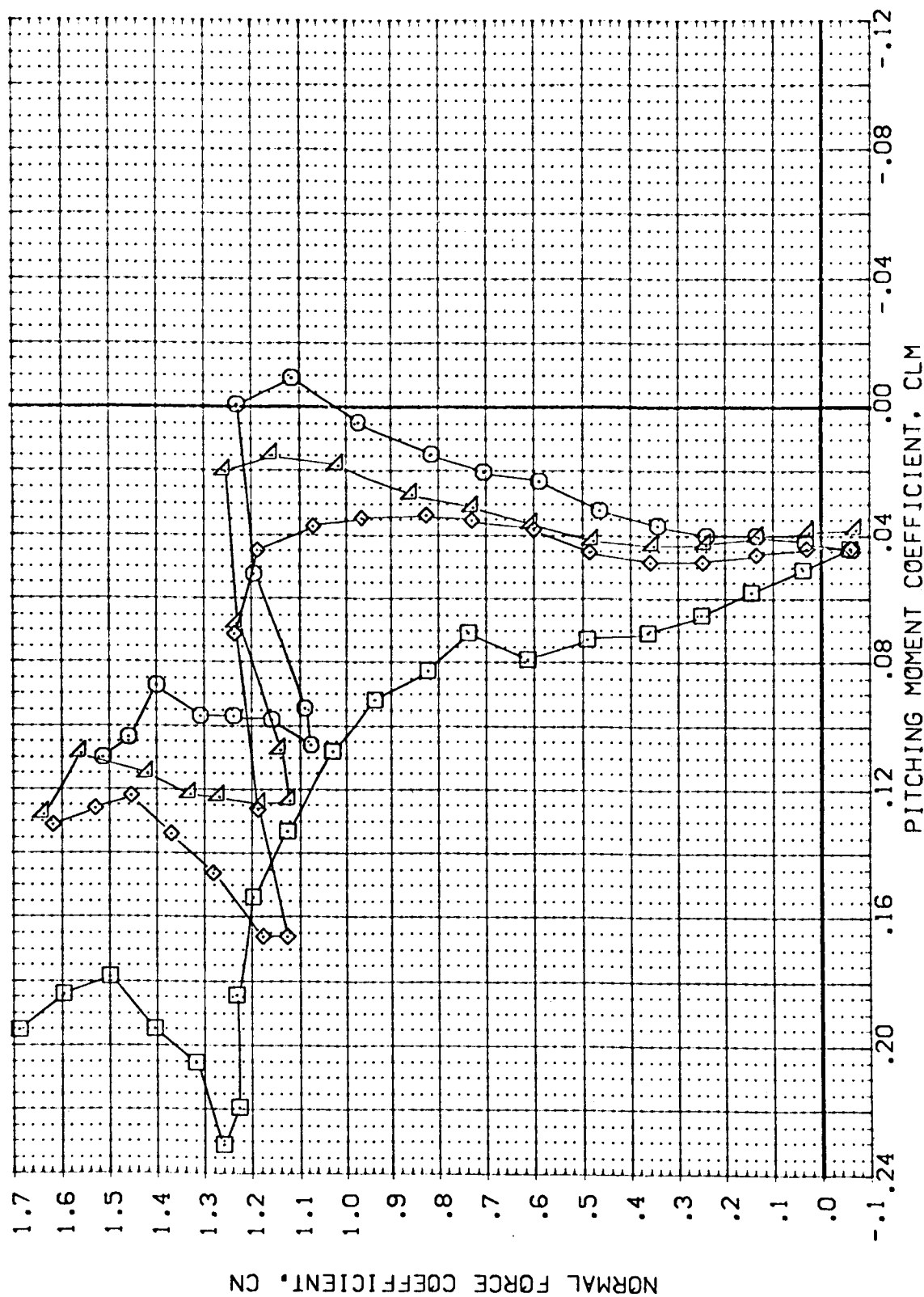


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	WSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SPREF 2690.0000
(F87S85)	WSFC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	REF 474.8000
(F87S91)	WSFC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	REF 936.7000
(F87SC0)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 838.7000
(F87S93)	WSFC 574(CA48) CRB 139B V/H23	.000	.000	999.990	.000	REF 2690.0000
						SCALE .0040

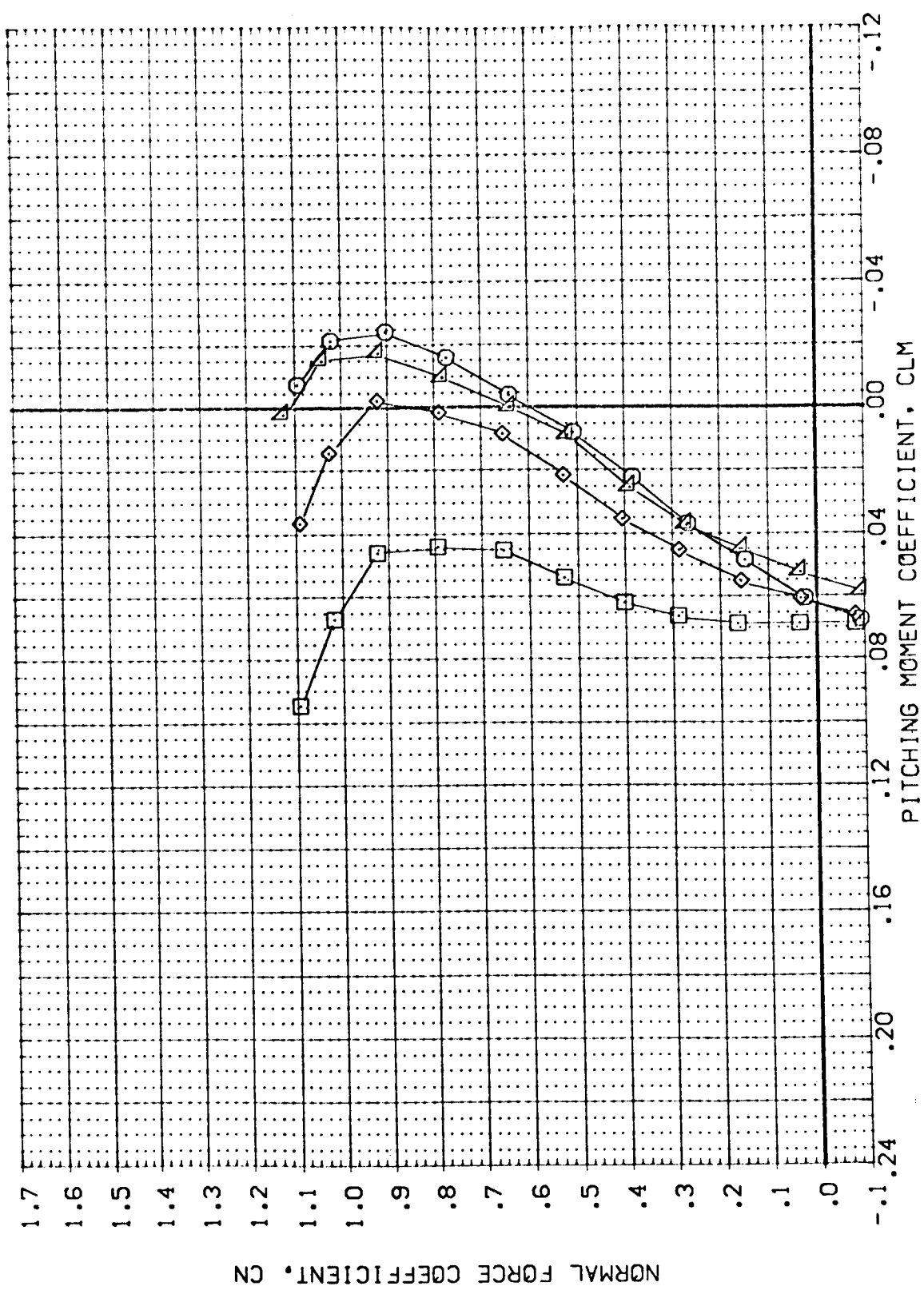


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)VACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87528) MSFC 574(CA48) CRB 139B
 (F87585) MSFC 574(CA48) CRB 139B W/H19
 (F87591) MSFC 574(CA48) CRB 139B W/H20
 (F87593) DATA NOT AVAILABLE
 (F87593) MSFC 574(CA48) CRB 139B W/H23

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SCIF
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XVRP 838.7000
 .000 .000 999.990 .000 YVRP .0000
 .000 .000 999.990 .000 ZVRP .0000
 SCALE .0010

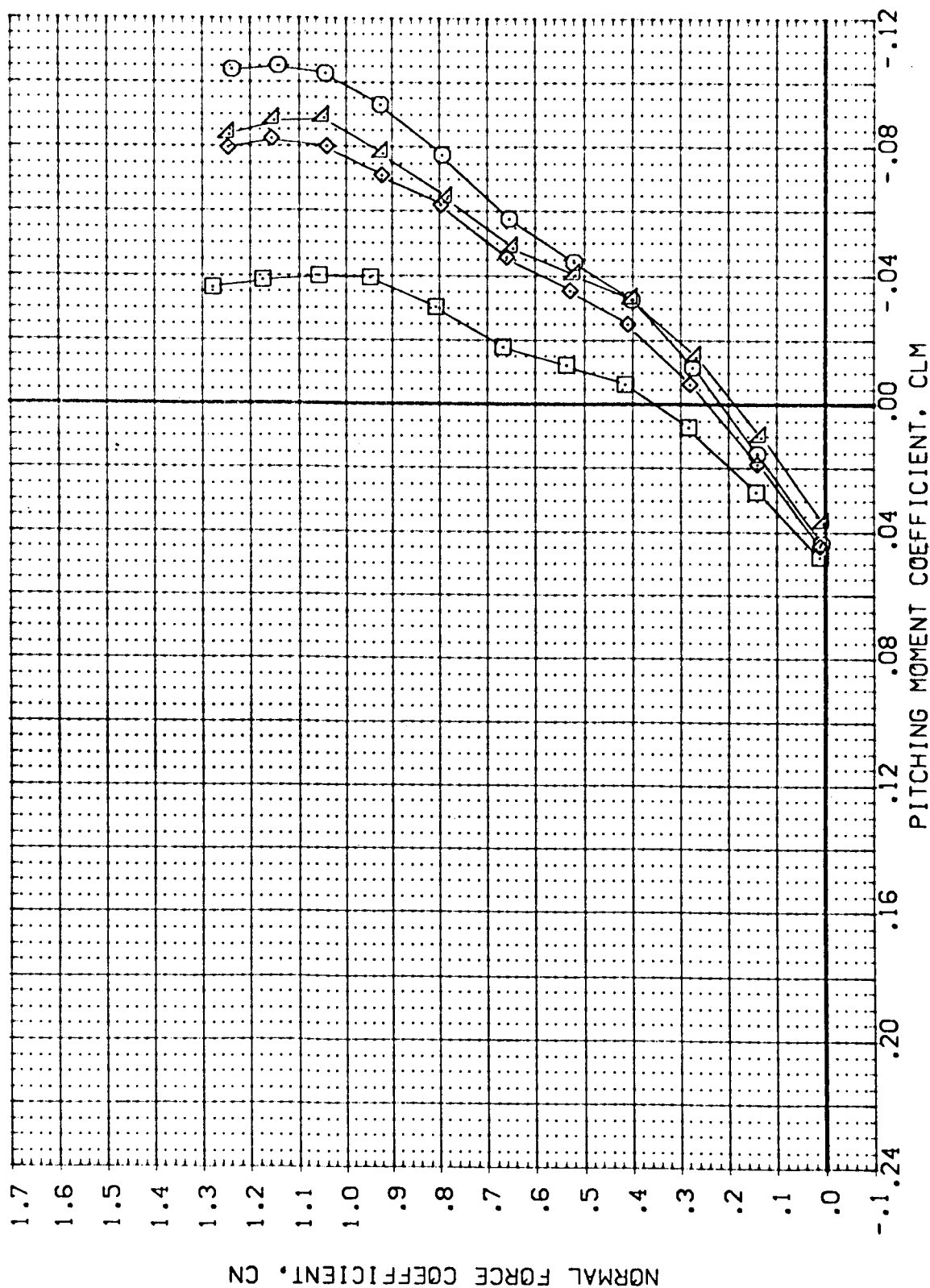


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(CJ)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87508) MSFC 574(OA48) ORB 139B
 (F87585) MSFC 574(OA48) ORB 139B V/H19
 (F87591) MSFC 574(OA48) ORB 139B V/H20
 (F87593) DATA NOT AVAILABLE
 (F87593) DATA NOT AVAILABLE

BETA ELEVTR SPGRK BCFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 .000 999.990 .000 LREF 474.8000 /
 .000 .000 999.990 .000 BREF 936.7000 /
 .000 .000 999.990 .000 XREF 838.7000 /
 .000 .000 999.990 .000 YREF .0000 /
 .000 .000 999.990 .000 ZREF .0000 /
 .000 .000 999.990 .000 SCALE .0040 /

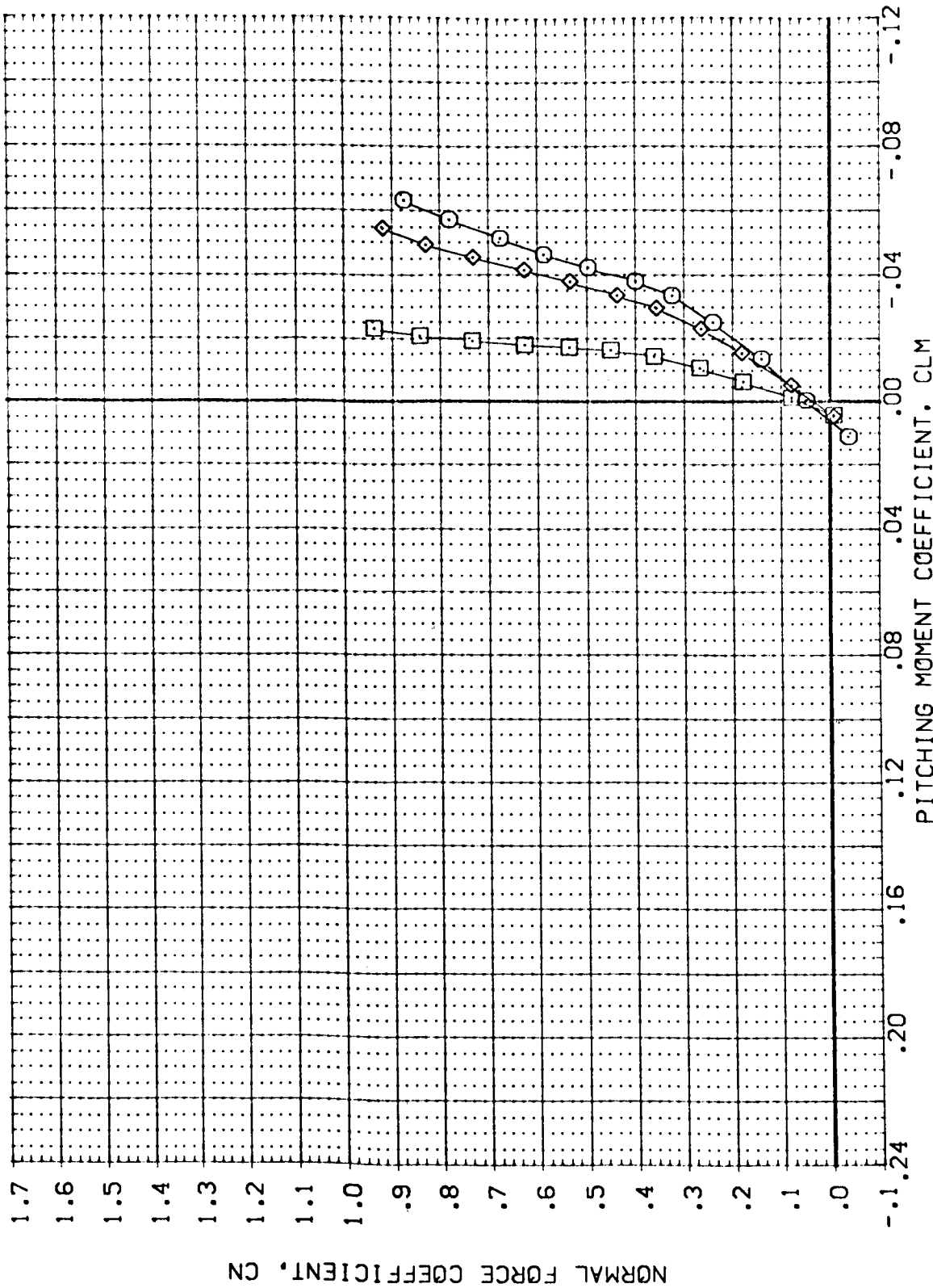


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(0)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87S09)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	LREF 474.8000
(F87S10)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	BREF 936.7000
(F87S11)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	XREF 838.7000
(F87S12)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	YREF .0000
(F87S13)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	ZREF .0000
(F87S14)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SCALE .0010

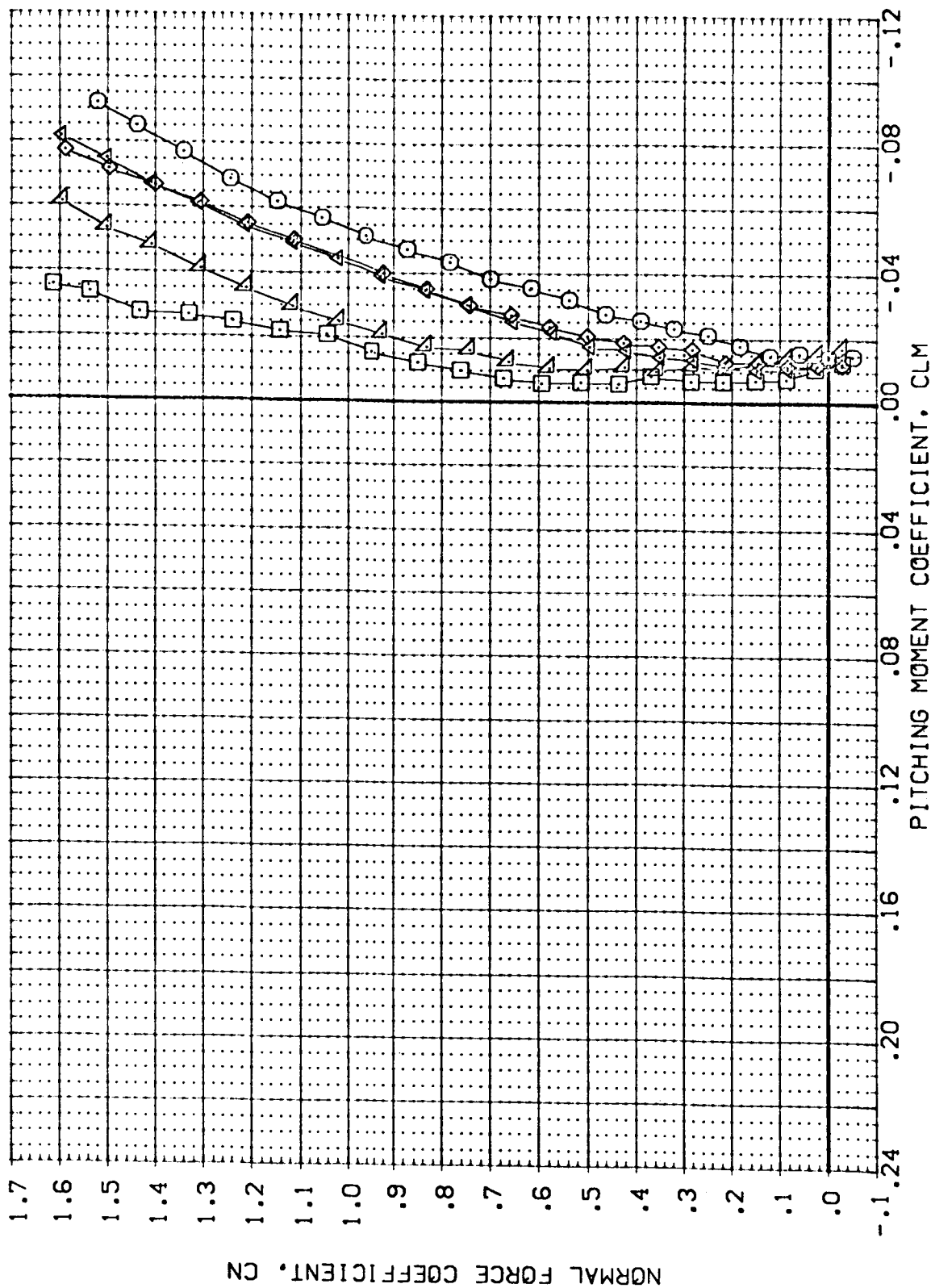


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPGRK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S85)	MSFC 574(CA48) CRB 1398 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 1398 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87SC0)	MSFC 574(CA48) CRB 1398 V/H22	.000	.000	999.990	.000	XREF 838.7000
(F87S93)	MSFC 574(CA48) CRB 1398 V/H23	.000	.000	999.990	.000	YREF .0000
						ZREF .0000
						SCALE .0010

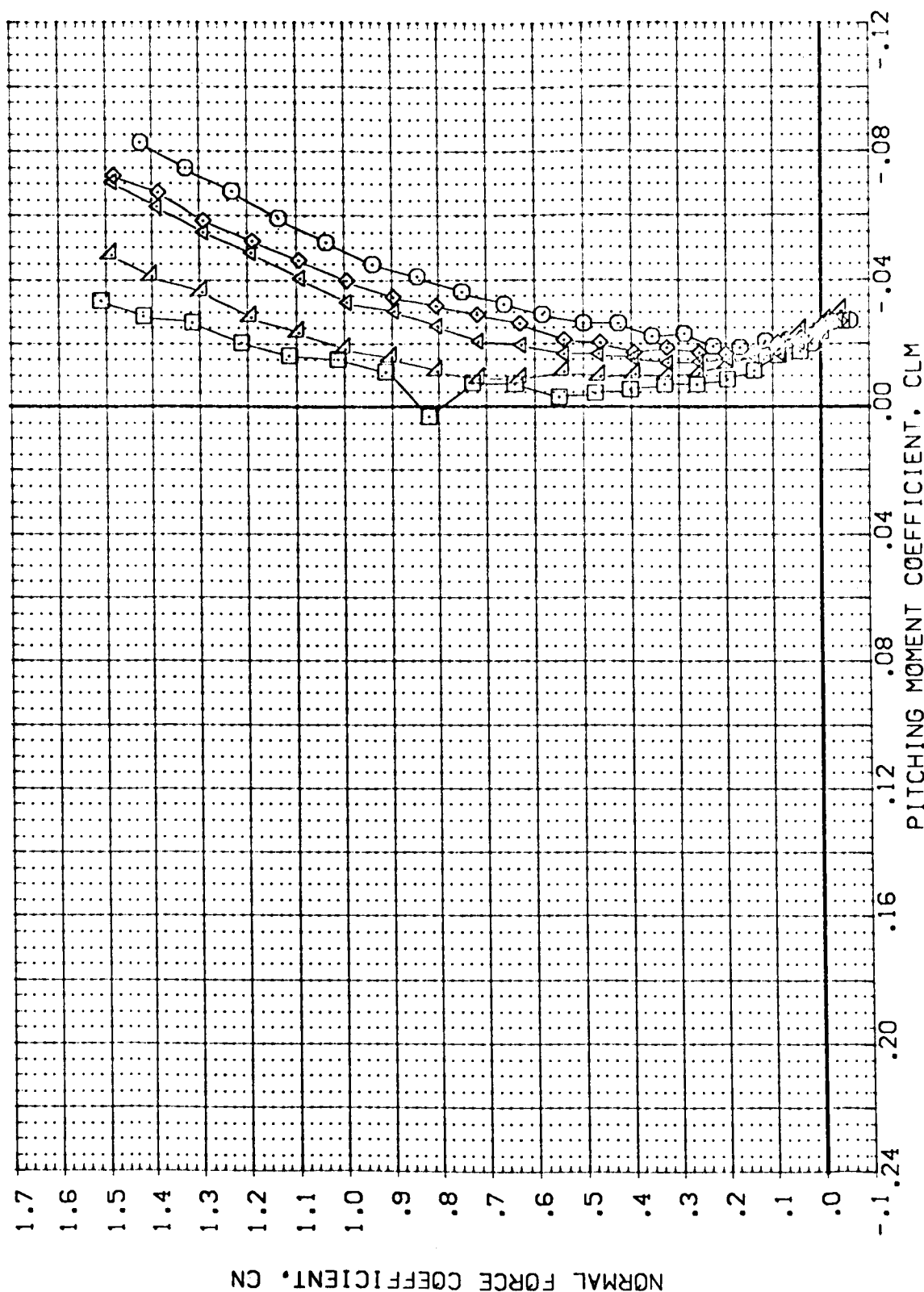


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CDMACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87595)	MSFC 574(OA48) ORB 139B V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(OA48) ORB 139B V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87500)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(OA48) ORB 139B V/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

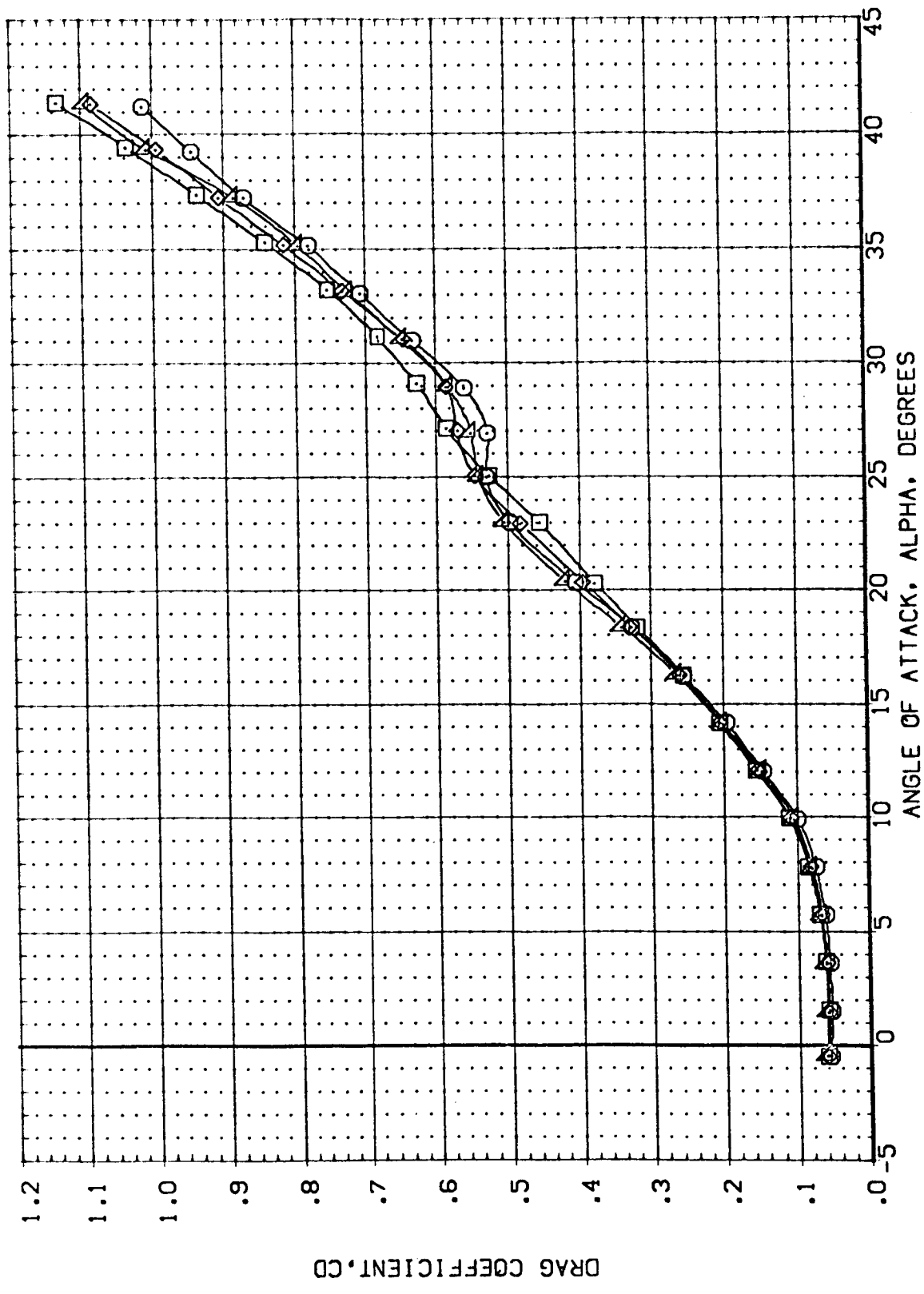


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BCFLAP	REFERENCE INFORMATION
(F87528)	MSFC 574(OA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87528)	MSFC 574(OA48) CRB 139B W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87528)	MSFC 574(OA48) CRB 139B W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87528)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87528)	MSFC 574(OA48) CRB 139B W/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

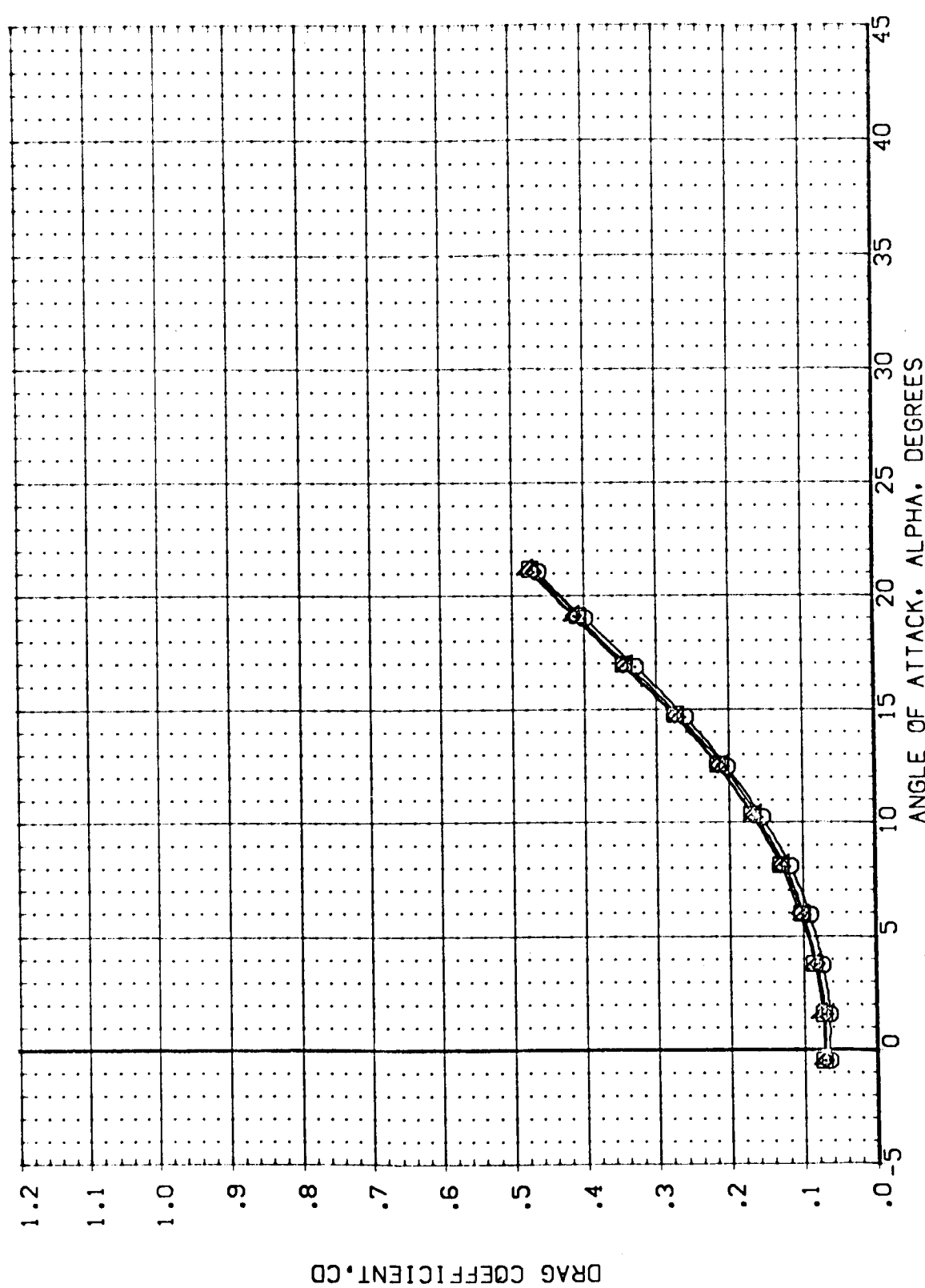


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87S98)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S85)	MSFC 574(CA48) CRB 1398 W/H19	.000	.000	999.990	.000	BREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 1398 W/H20	.000	.000	999.990	.000	BREF 936.0000
(F87S93)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 838.0000
	MSFC 574(CA48) CRB 1398 W/H23	.000	.000	999.990	.000	YREF 0000.0000
						ZREF 0000.0000
						SCALE 0040

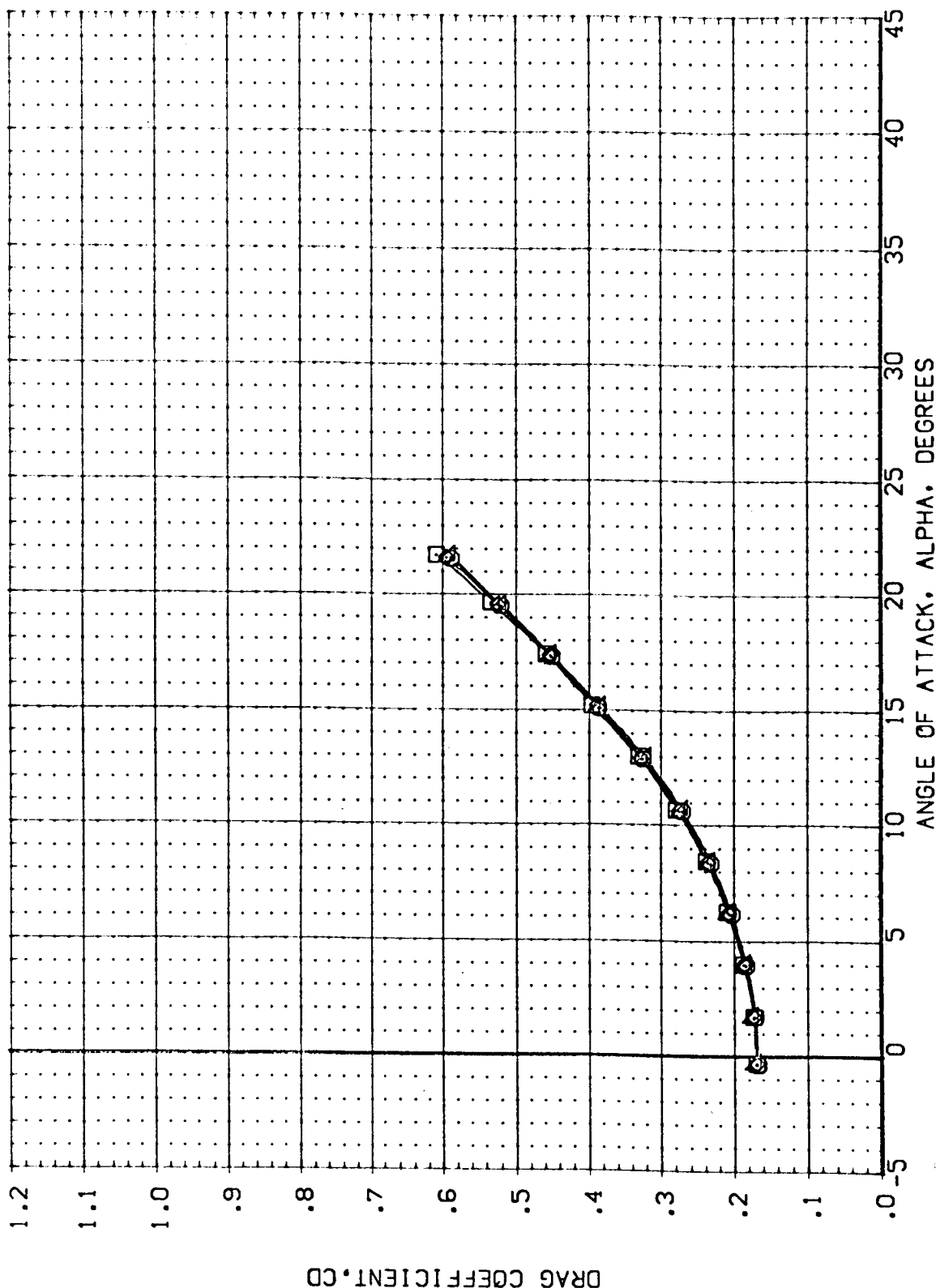


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(C)MACH = 1.20

BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE	INFORMATION
.000	.000	.000	.000	SREF	2690.0000
.000	.000	.000	.000	LEFF	474.8000
.000	.000	.000	.000	BREF	936.7000
.000	.000	.000	.000	XREF	838.7000
.000	.000	.000	.000	YREF	.0000
.000	.000	.000	.000	ZREF	.0000
.000	.000	.000	.000	SCALE	.0040

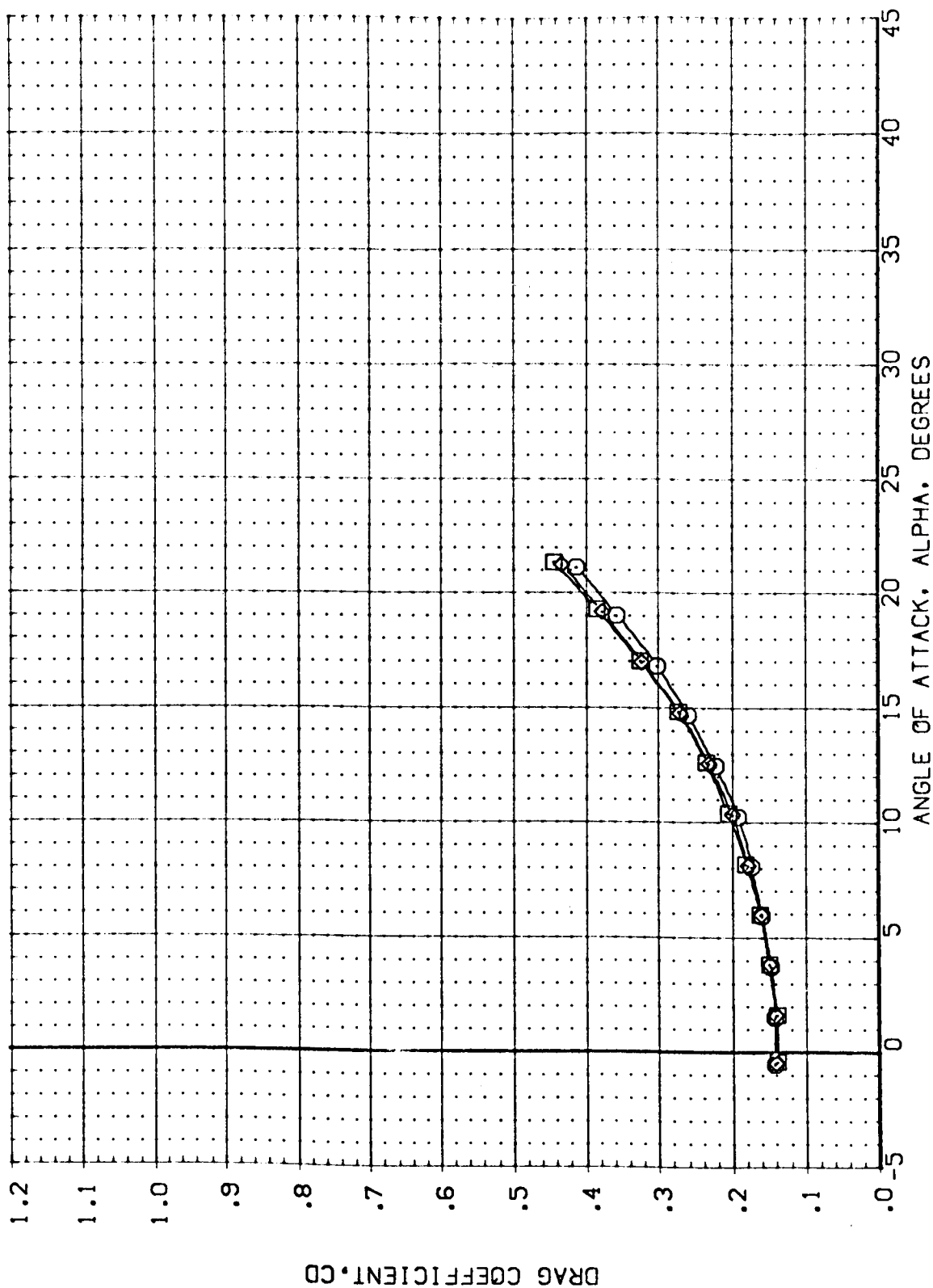


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

```
COMACH = 1.95
```


DATA SET SYMBO	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
[F8/S08]	MSEC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
[F8/S09]	MSEC 574(CA48) CRB 1399 W/H19	.000	.000	999.990	.000	LREF 474.8000 IN.
[F8/S10]	MSEC 574(CA48) CRB 1399 W/H20	.000	.000	999.990	.000	BREF 936.7000 IN.
[F8/S11]	MSEC 574(CA48) CRB 1399 W/H22	.000	.000	999.990	.000	XREF 838.7000 IN.
[F8/S12]	MSEC 574(CA48) CRB 1399 W/H23	.000	.000	999.990	.000	YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

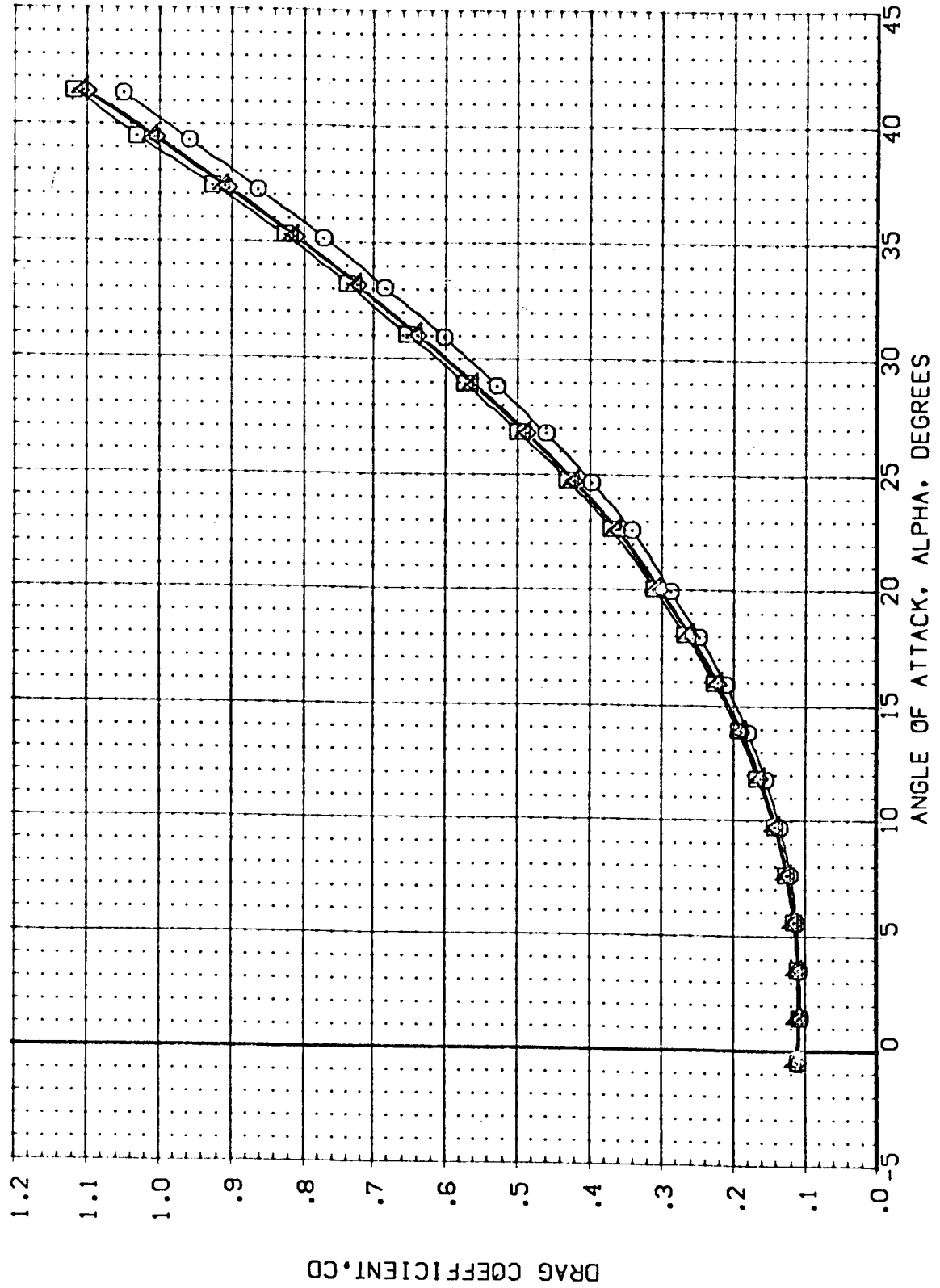


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S28)	WSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S85)	WSFC 574(CA48) CR8 1398 V/H-9	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	WSFC 574(CA48) CR8 1398 V/H-20	.000	.000	999.990	.000	BREF 936.7000
(F87S93)	WSFC 574(CA48) CR8 1398 V/H-22	.000	.000	999.990	.000	XREF 838.7000
						VREF .0000
						ZREF .0000
						SCALE .0040

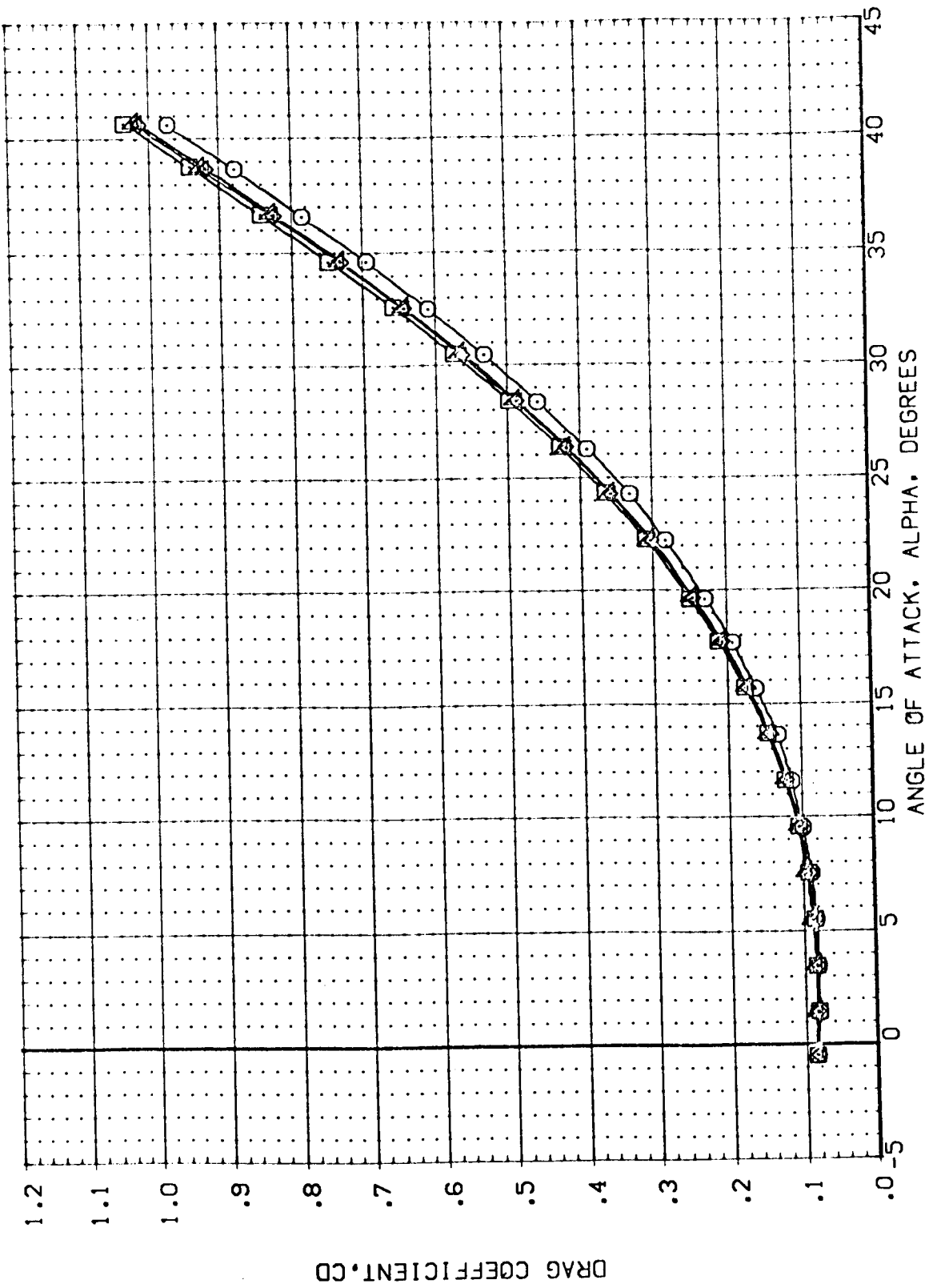
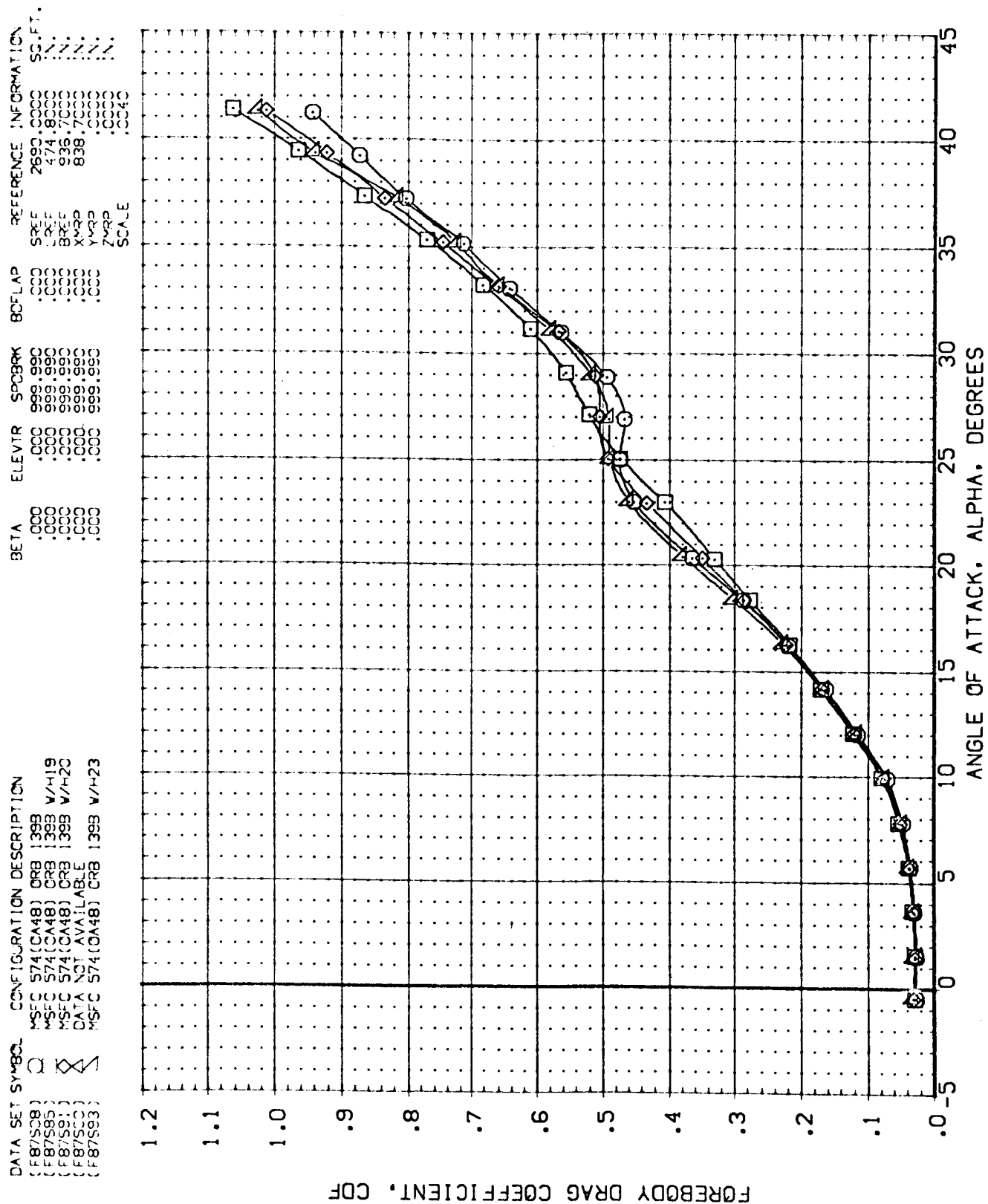


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(F)MACH = 4.96


$$[A]_{\text{NACH}} = .60$$

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(B75C8)	VSFC 574(CA48)	CRB 139B
(B75B8)	VSFC 574(CA48)	CRB 139B V/H19
(B75C8)	VSFC 574(CA48)	CRB 139B V/H20
(B75C8)	VSFC 574(CA48)	CRB 139B V/H21
(B75C8)	VSFC 574(CA48)	CRB 139B V/H22
(B75C8)	VSFC 574(CA48)	CRB 139B V/H23

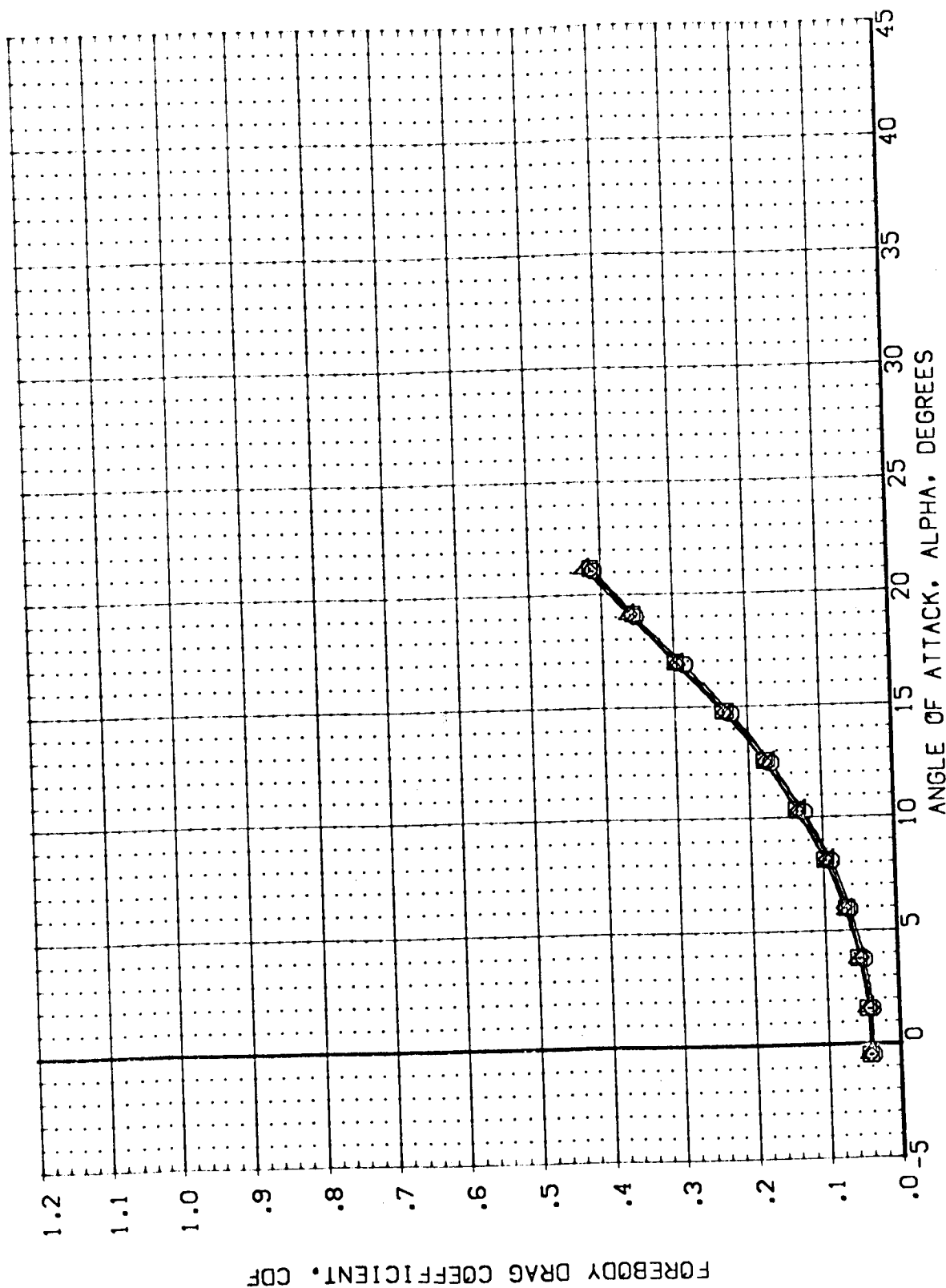


FIG. 13
EFFECT OF TRIMMER ON ORBITER 139B

$$(B) \text{MACH} = .89$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87508) MSFC 574(CA48) CRB 1398

(F87585) MSFC 574(CA48) CRB 1398 V/H19

(F87591) MSFC 574(CA48) CRB 1398 V/H20

(F87593) DATA NOT AVAILABLE

(F87593) MSFC 574(CA48) CRB 1398 V/H23

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SC.FT.

.000 .000 999.990 .000 LREF 474.8000

.000 .000 999.990 .000 BREF 936.7000

.000 .000 999.990 .000 XMRP 838.7000

.000 .000 999.990 .000 YMRP .0000

.000 .000 999.990 .000 ZMRP .0000

SCALE .0040

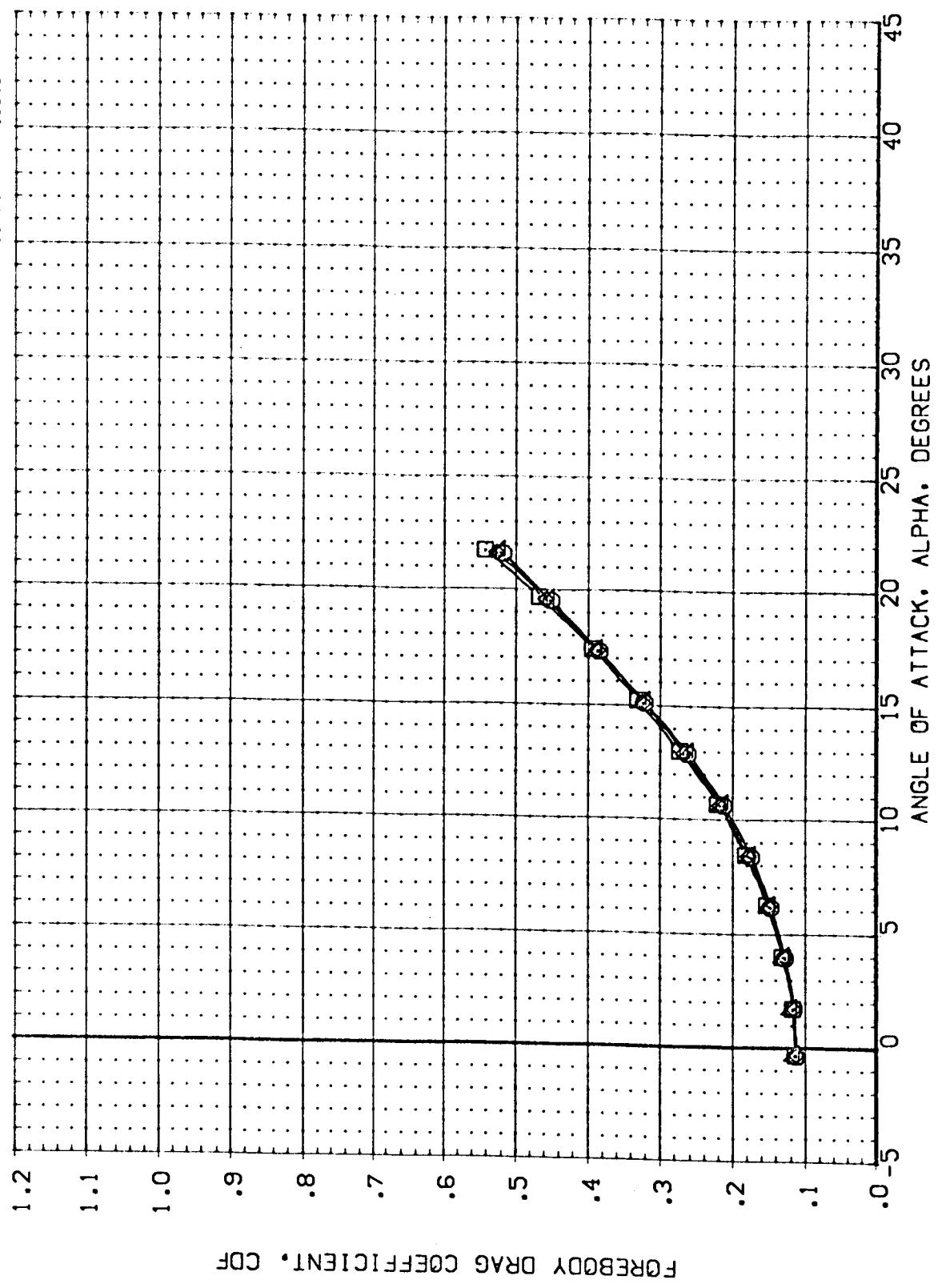


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S98) MSFC 574(OA48) CRB 1398 V/H19
 (F87S95) MSFC 574(OA48) CRB 1398 V/H20
 (F87S94) MSFC 574(OA48) CRB 1398 V/H20
 (F87S93) DATA NOT AVAILABLE
 (F87S92) DATA NOT AVAILABLE

BETA .000
 ELEVTR .000
 SPOBRK .000
 BDFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

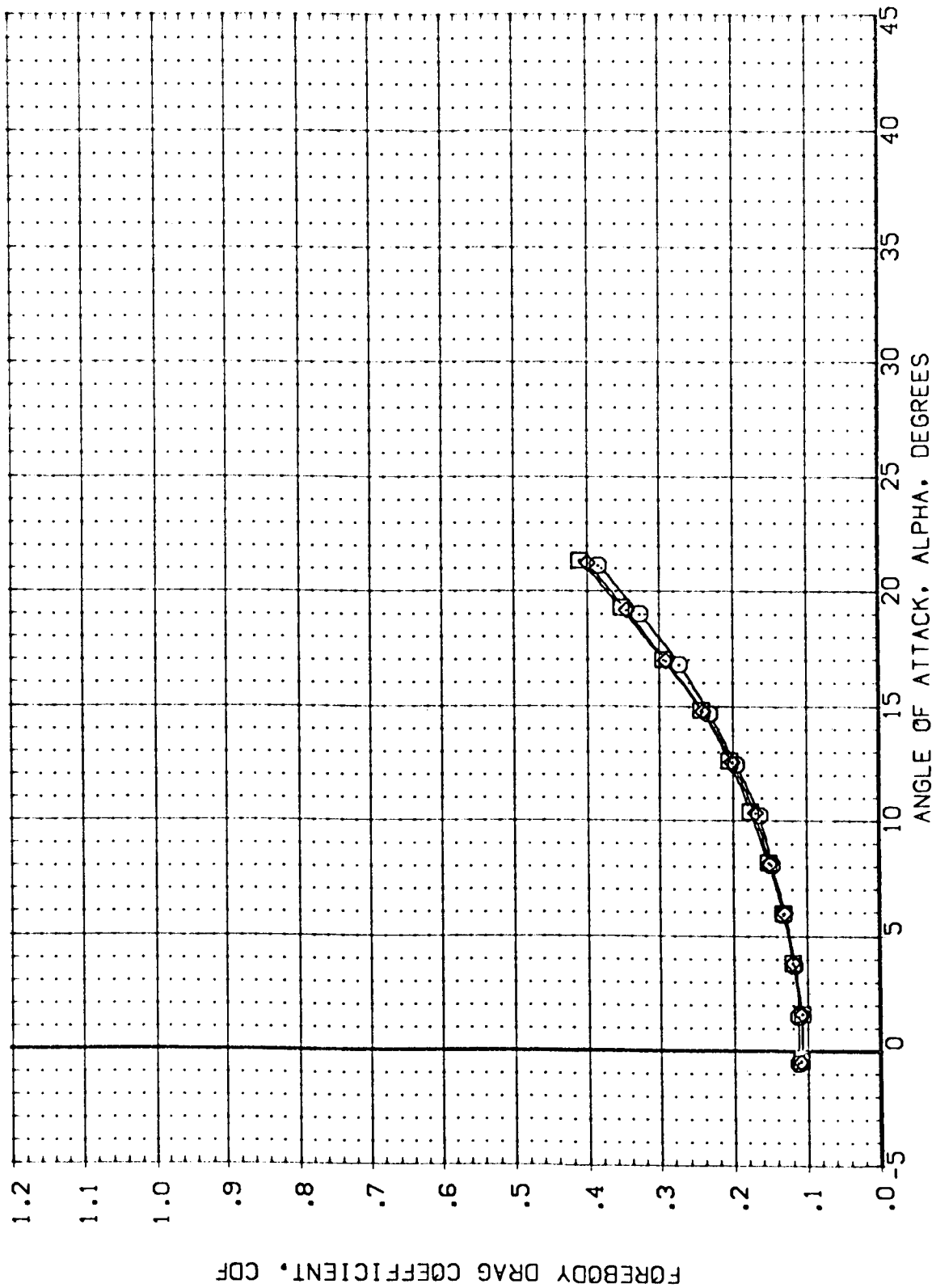


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87585)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	BREF 938.7000
(F87500)	MSFC 574(CA48) CRB 139B W/H22	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

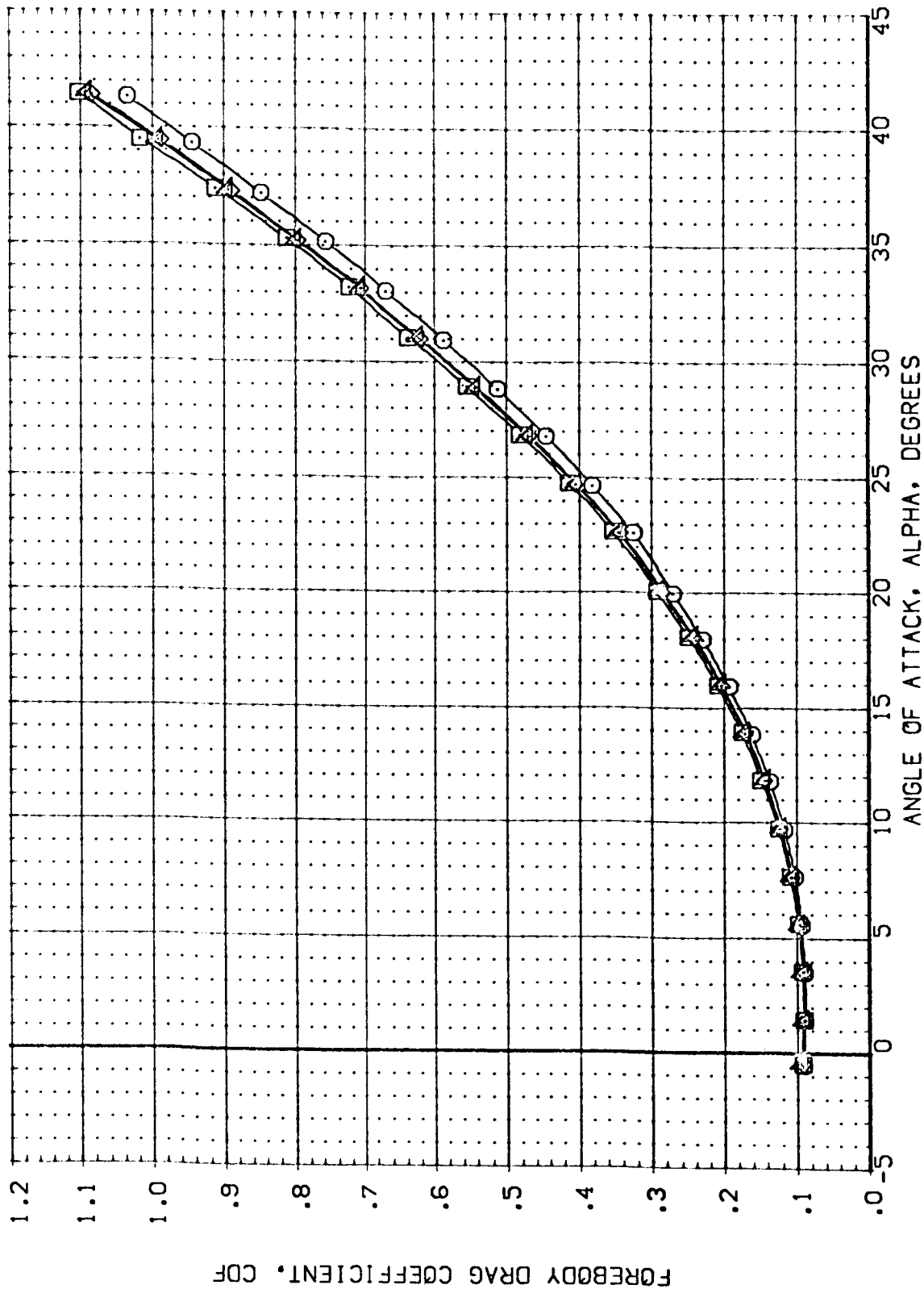


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(E)MACH = 2.99

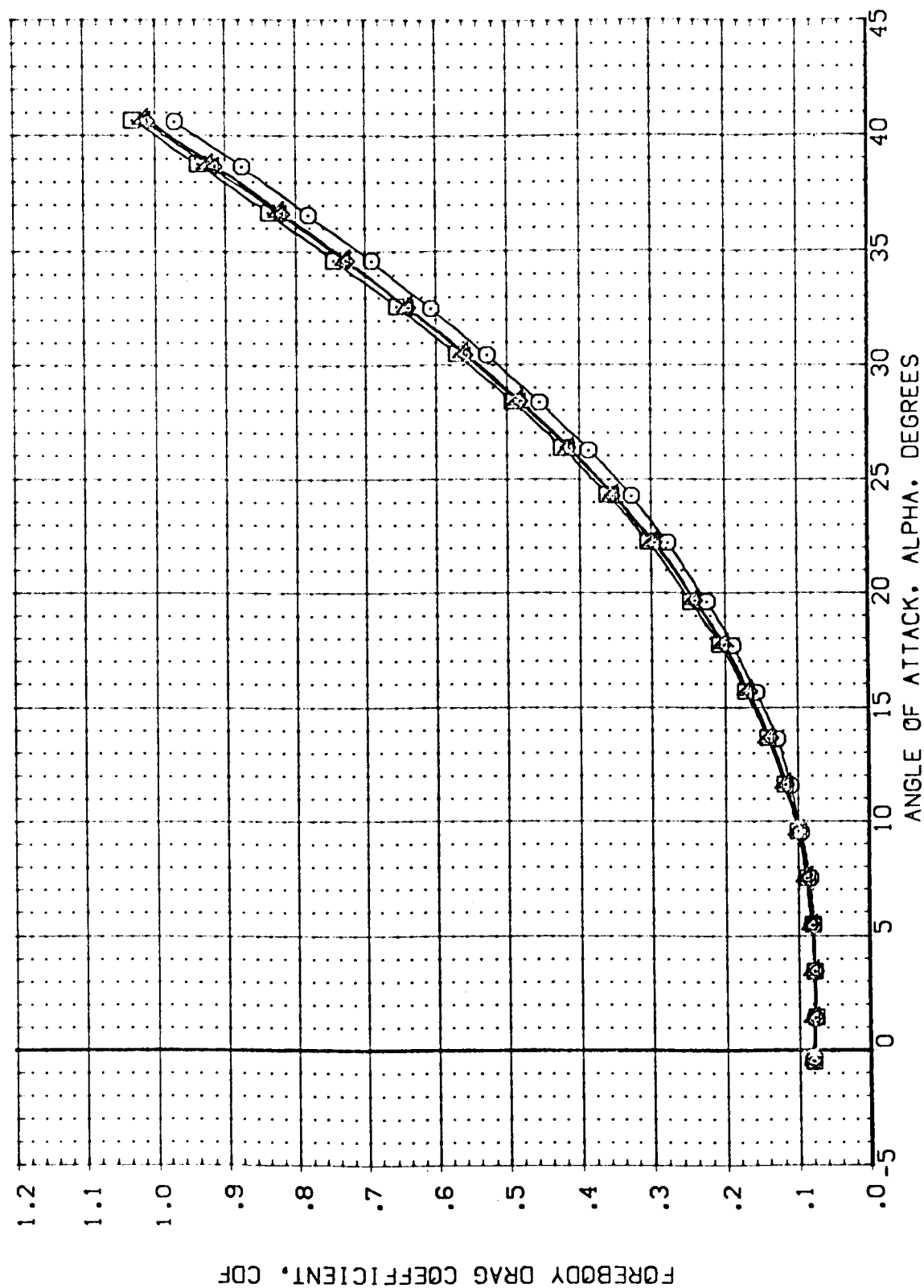
[illegible]

FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

$$\{F\}MACH = 4.96$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

1 F87SC8) MSFC 574(CA48) CRB 139B V/H19

2 F87S85) MSFC 574(CA48) CRB 139B V/H20

3 F87S91) MSFC 574(CA48) CRB 139B V/H20

4 F87SCQ) DATA NOT AVAILABLE

5 F87S93) MSFC 574(CA48) CRB 139B V/H23

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.

.000 .000 999.990 .000 REF 474.8000 IN.

.000 .000 999.990 .000 SREF 936.7000 IN.

.000 .000 999.990 .000 XREF 838.7000 IN.

.000 .000 999.990 .000 VREF .0000 IN.

.000 .000 999.990 .000 ZREF .0000 IN.

SCALE .0040

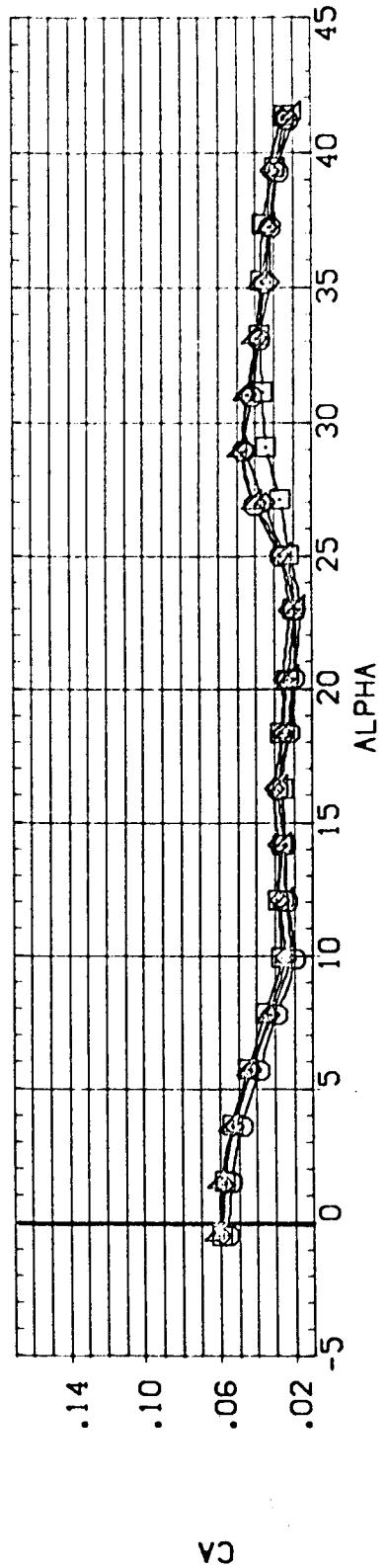
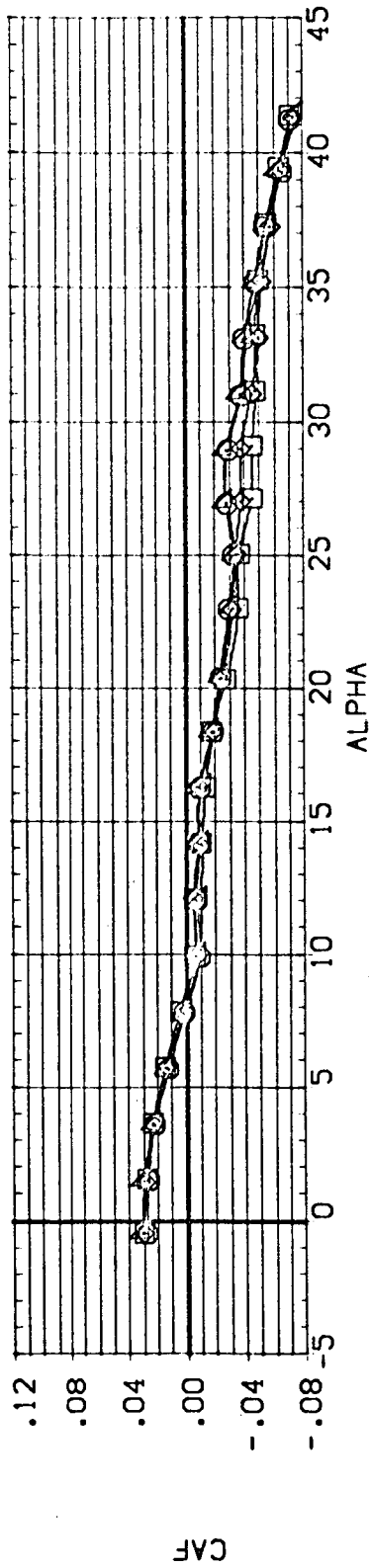
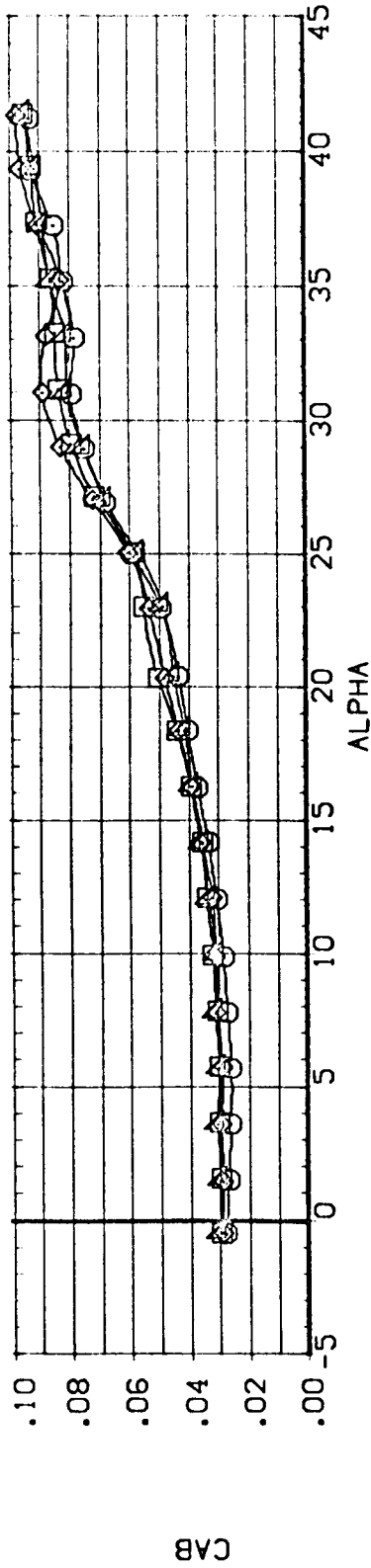


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87509)	MSFC 574(CA48) ORB 1398 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) ORB 1398 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87511)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87512)	MSFC 574(CA48) ORB 1398 V/H23	.000	.000	999.990	.000	YMRP .0000
(F87513)		.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

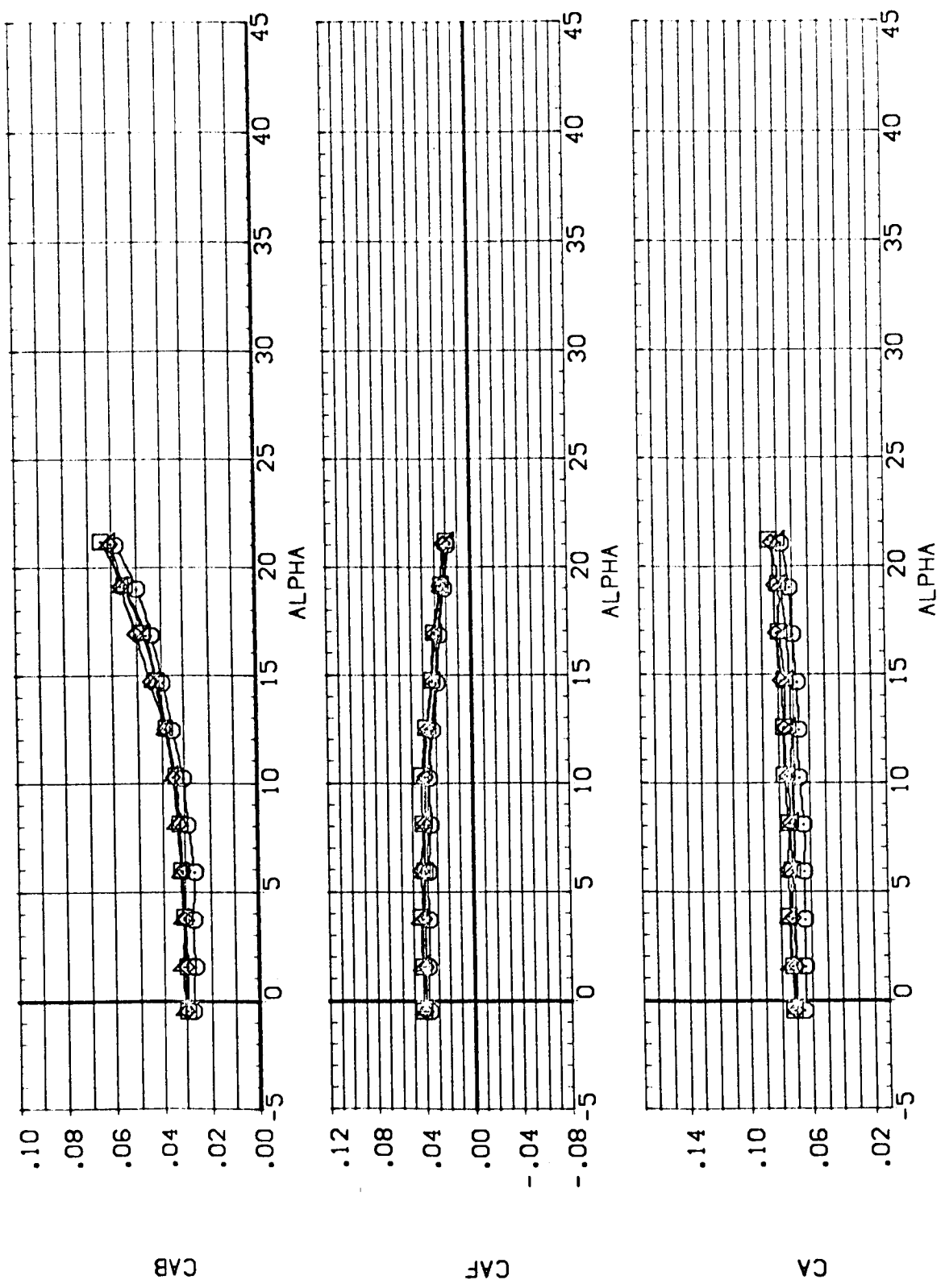


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398
(B) MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S08) WSC 574(CA48) CRB 139B
 (F87S09) WSC 574(CA48) CRB 139B W/H19
 (F87S10) WSC 574(CA48) CRB 139B W/H20
 (F87S11) DATA NOT AVAILABLE
 (F87S12) WSC 574(CA48) CRB 139B W/H23

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XREF 838.7000
 .000 .000 999.990 .000 YREF .0000
 .000 .000 999.990 .000 ZREF .0000
 .000 .000 999.990 .000 SCALE .0040

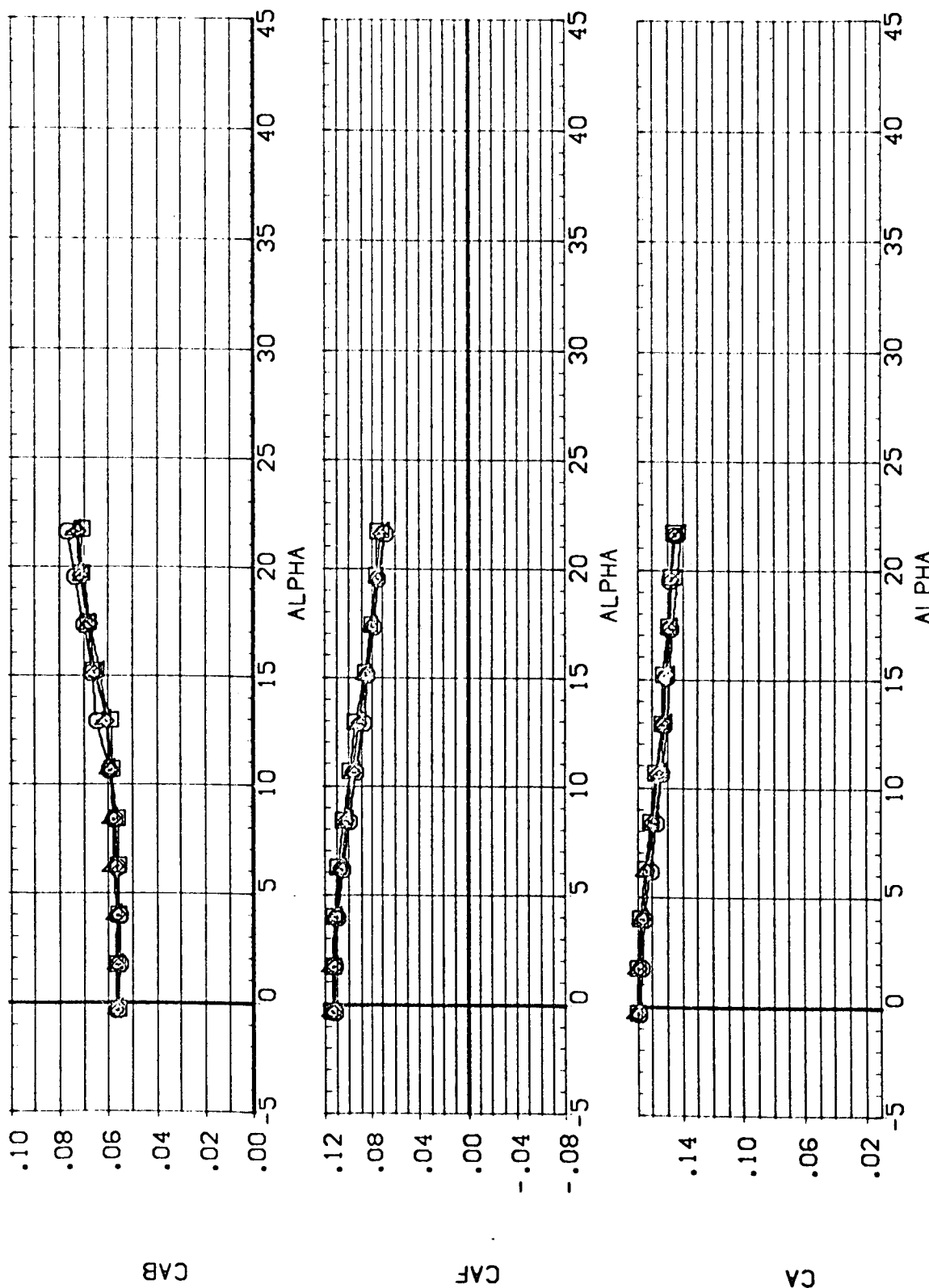


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CCMACH = 1.20

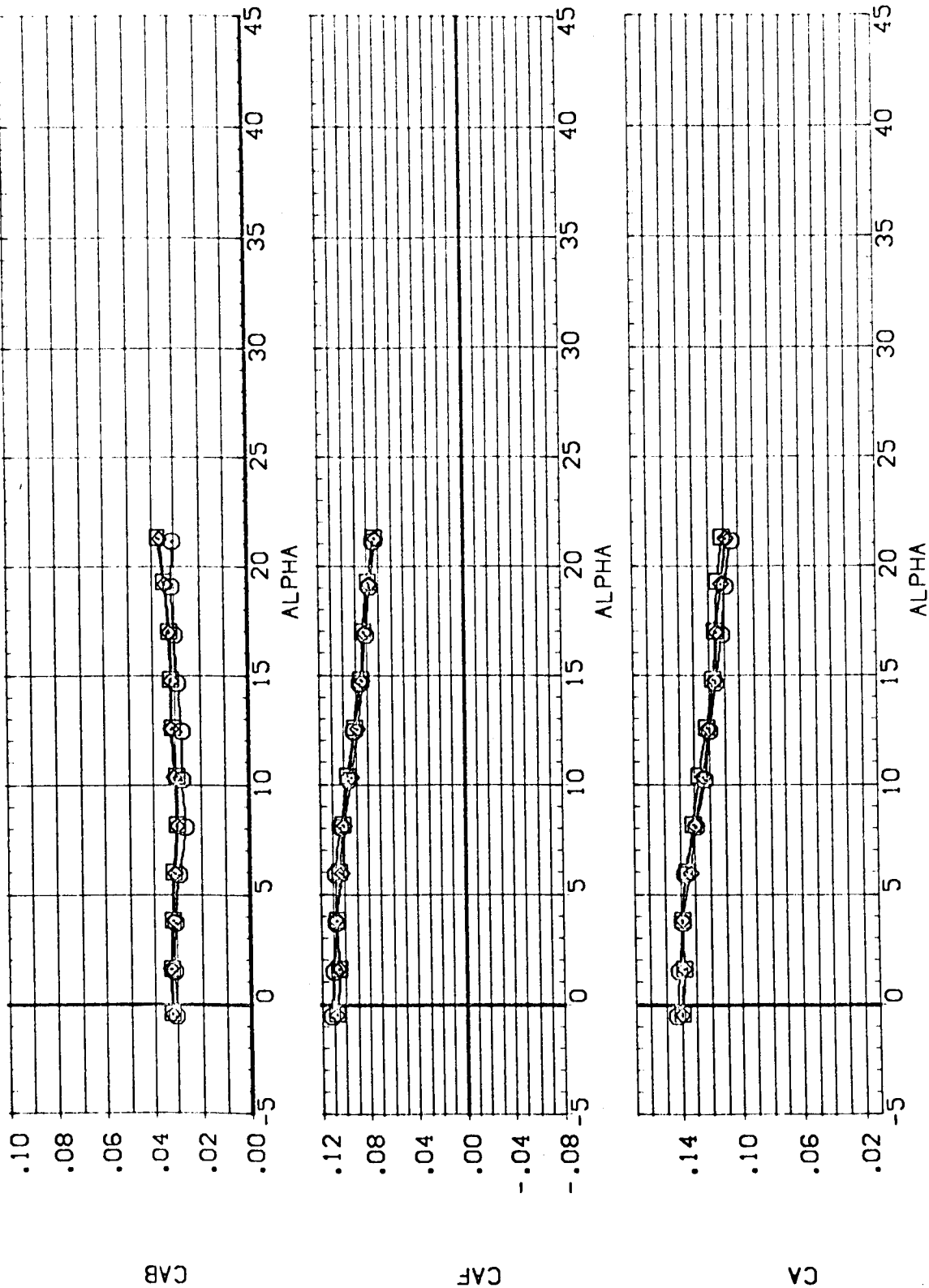
[illegible]

FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

COMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CRB 393 V/H19	.000	.000	999.990	.000	2690.0000
(F87S85)	MSFC 574(CA48) CRB 393 V/H20	.000	.000	999.990	.000	474.8000
(F87S91)	MSFC 574(CA48) CRB 393 V/H20	.000	.000	999.990	.000	936.7000
(F87SC0)	MSFC 574(CA48) CRB 393 V/H22	.000	.000	999.990	.000	838.7000
(F87S93)	MSFC 574(CA48) CRB 393 V/H23	.000	.000	999.990	.000	0.0000
					SCALE	.0010

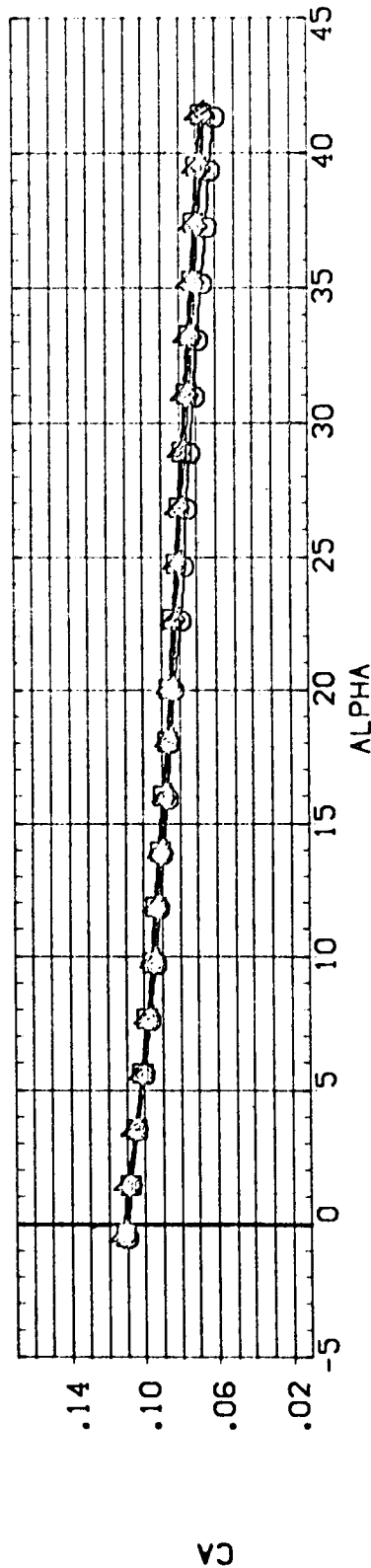
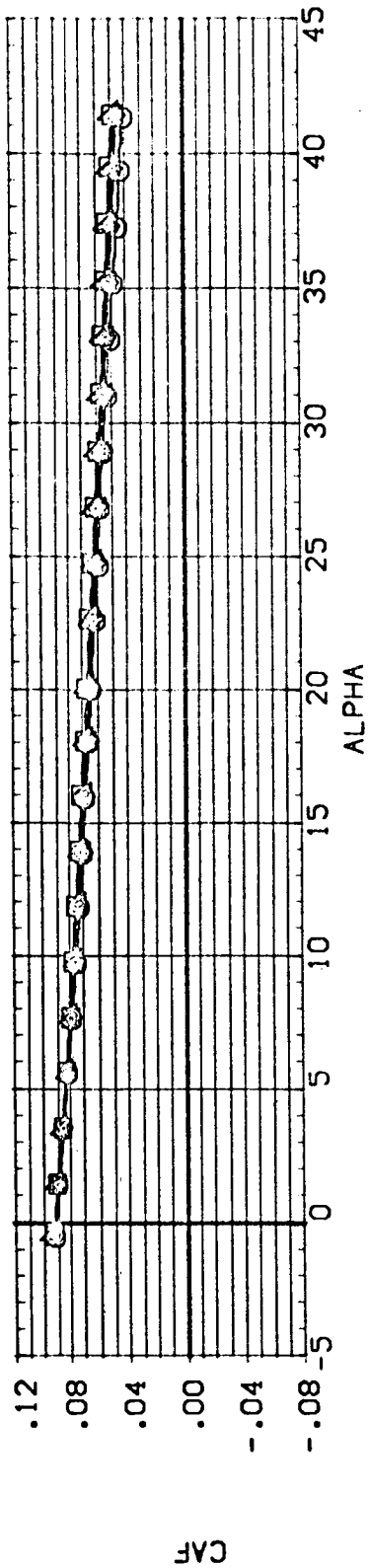
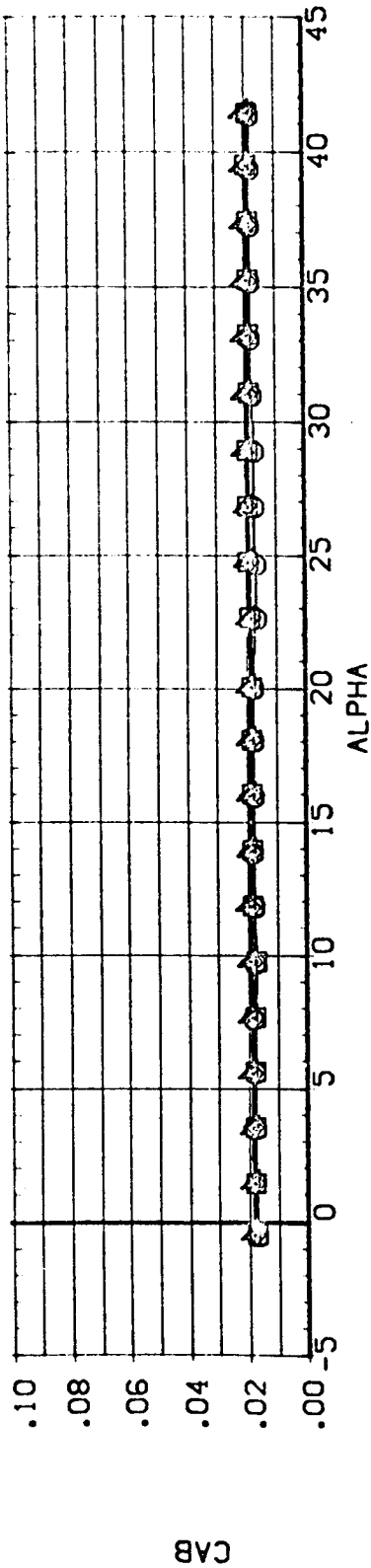


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87S28)	MSFC 574(CA48) CR3 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87S85)	MSFC 574(CA48) CR3 1398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CR3 1398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87SC0)	MSFC 574(CA48) CR3 1398 W/H22	.000	.000	999.990	.000	XREF 838.7000
(F87S93)	MSFC 574(CA48) CR3 1398 W/H23	.000	.000	999.990	.000	YREF .0000
						ZREF .0000
						SCALE .0040

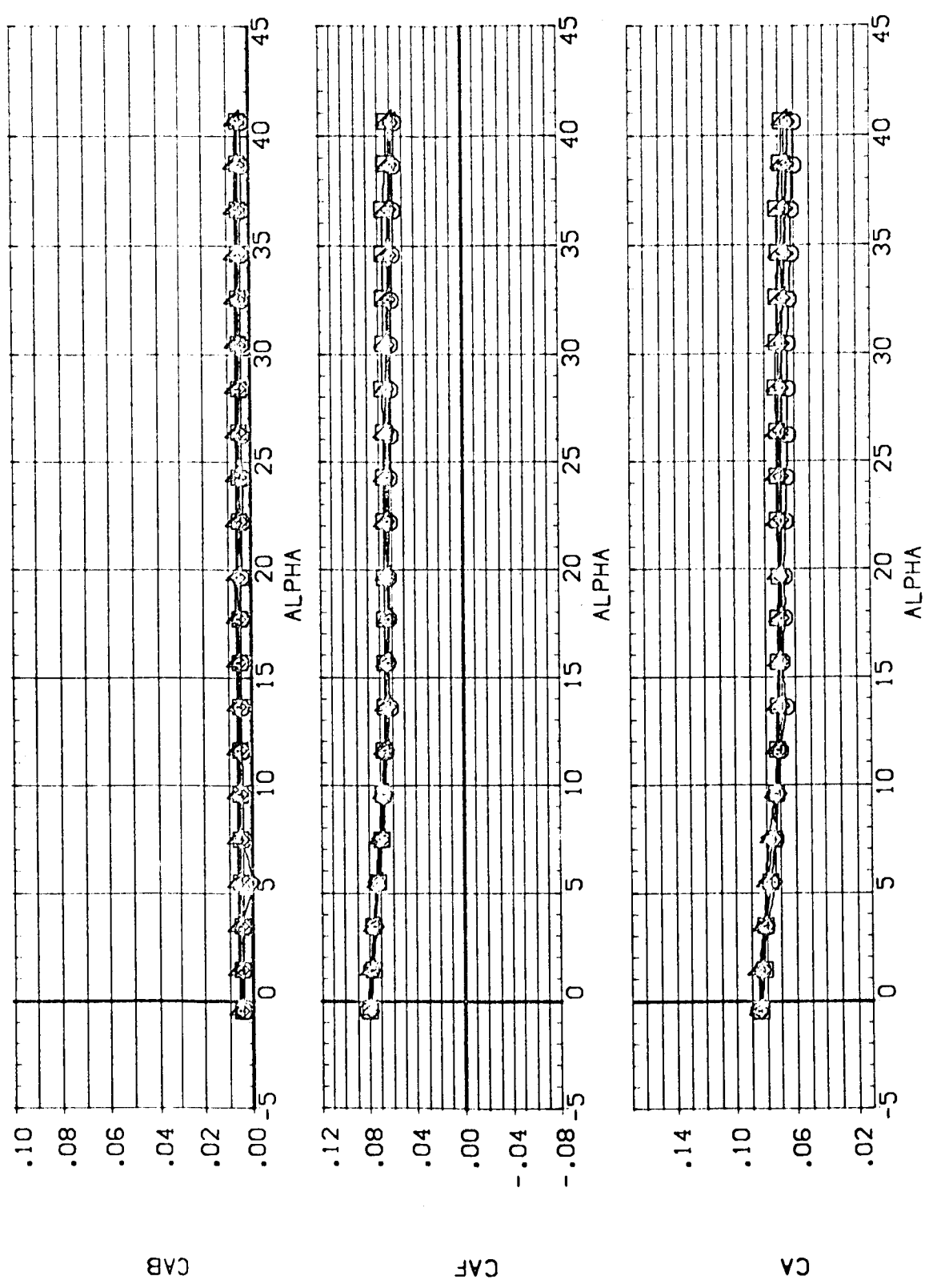


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S08) WSC 574(CA48) CRB 1398 W/H19
 (F87S85) WSC 574(CA48) CRB 1398 W/H20
 (F87S91) WSC 574(CA48) CRB 1398 W/H20
 (F87S93) DATA NOT AVAILABLE
 (F87S93) WSC 574(CA48) CRB 1398 W/H23

BETA ELEVTR SPCBRK BOFLAP
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000

REFERENCE INFORMATION
 SREF 2890.0000 SCF
 .REF 474.8000
 BREF 938.70000
 XMRP 838.70000
 YMRP .00000
 ZMRP .00000
 SCALE .00000

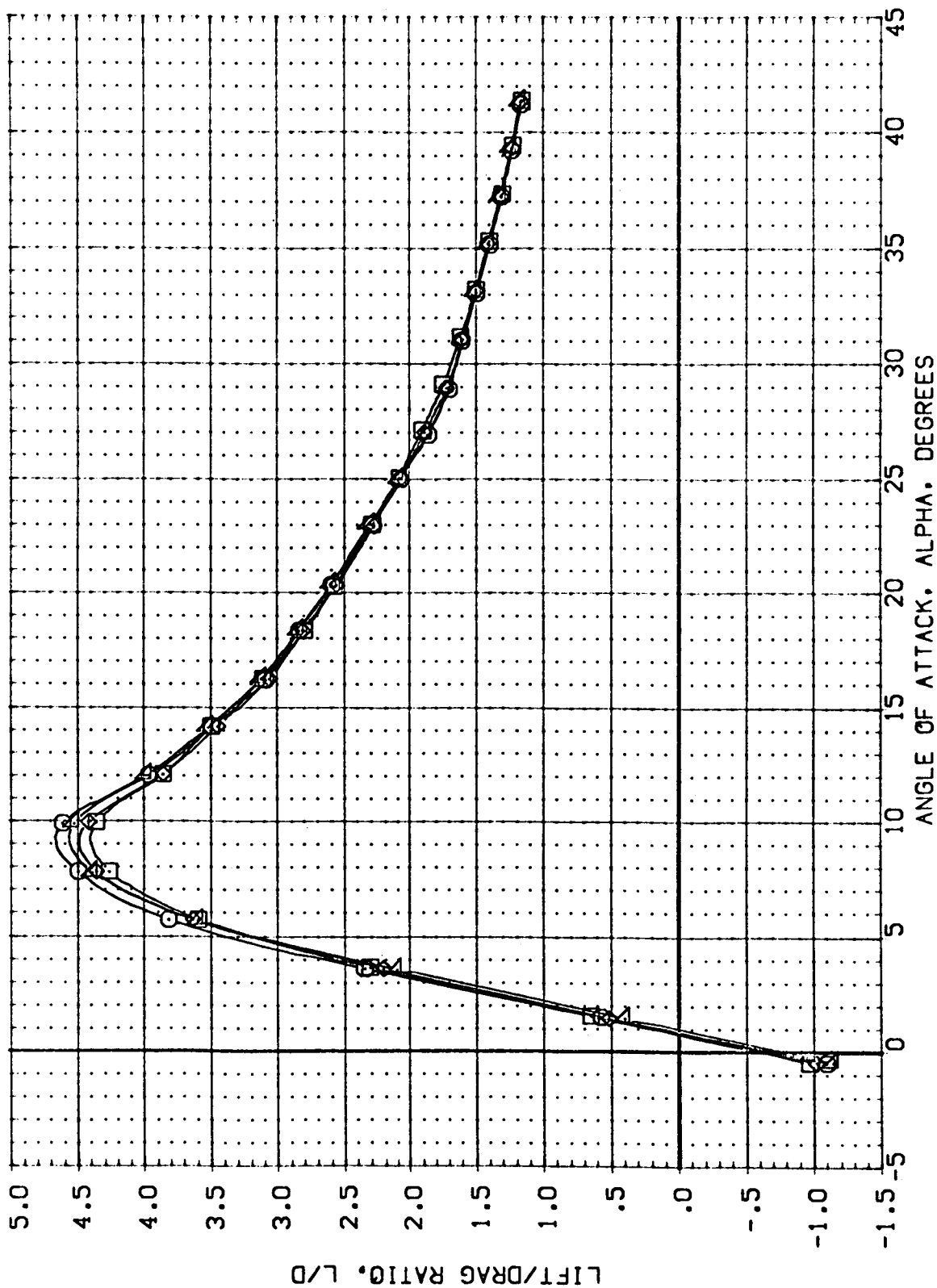
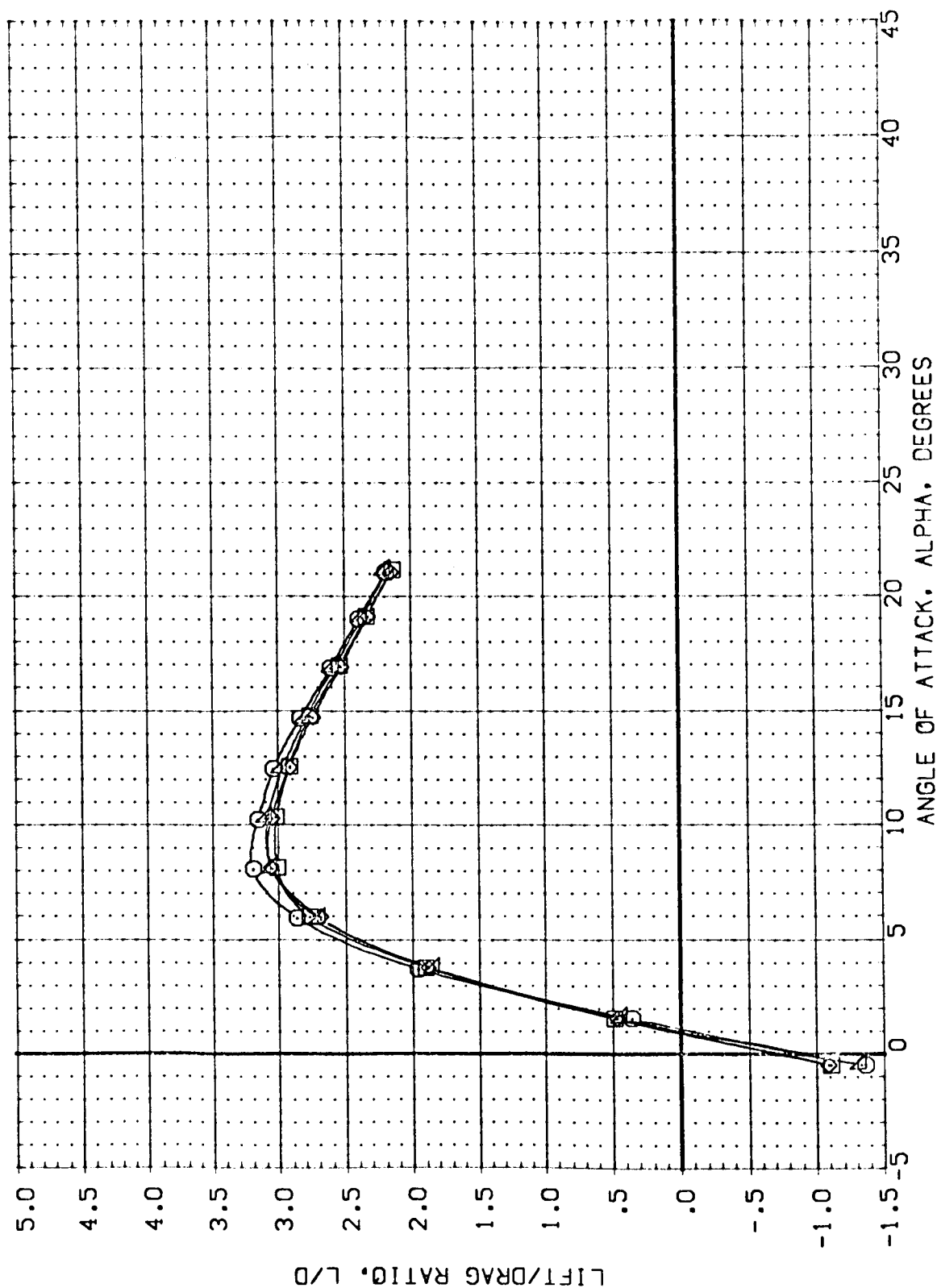


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = .60

[illegible]FIG. 13
EFFECT OF TRIMMER ON ORBITER 139B
$$[\text{B}]/[\text{A}]\text{CH} = .89$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	WSEC 574(CA48) CRB 139B	.000	.000	999.990	.000	SC.F.F.
(F87509)	WSEC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	SC.F.F.
(F87510)	WSEC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	SC.F.F.
(F87511)	WSEC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	SC.F.F.
(F87512)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SC.F.F.
(F87593)	WSEC 574(CA48) CRB 139B V/H23	.000	.000	999.990	.000	SC.F.F.
						SCALE

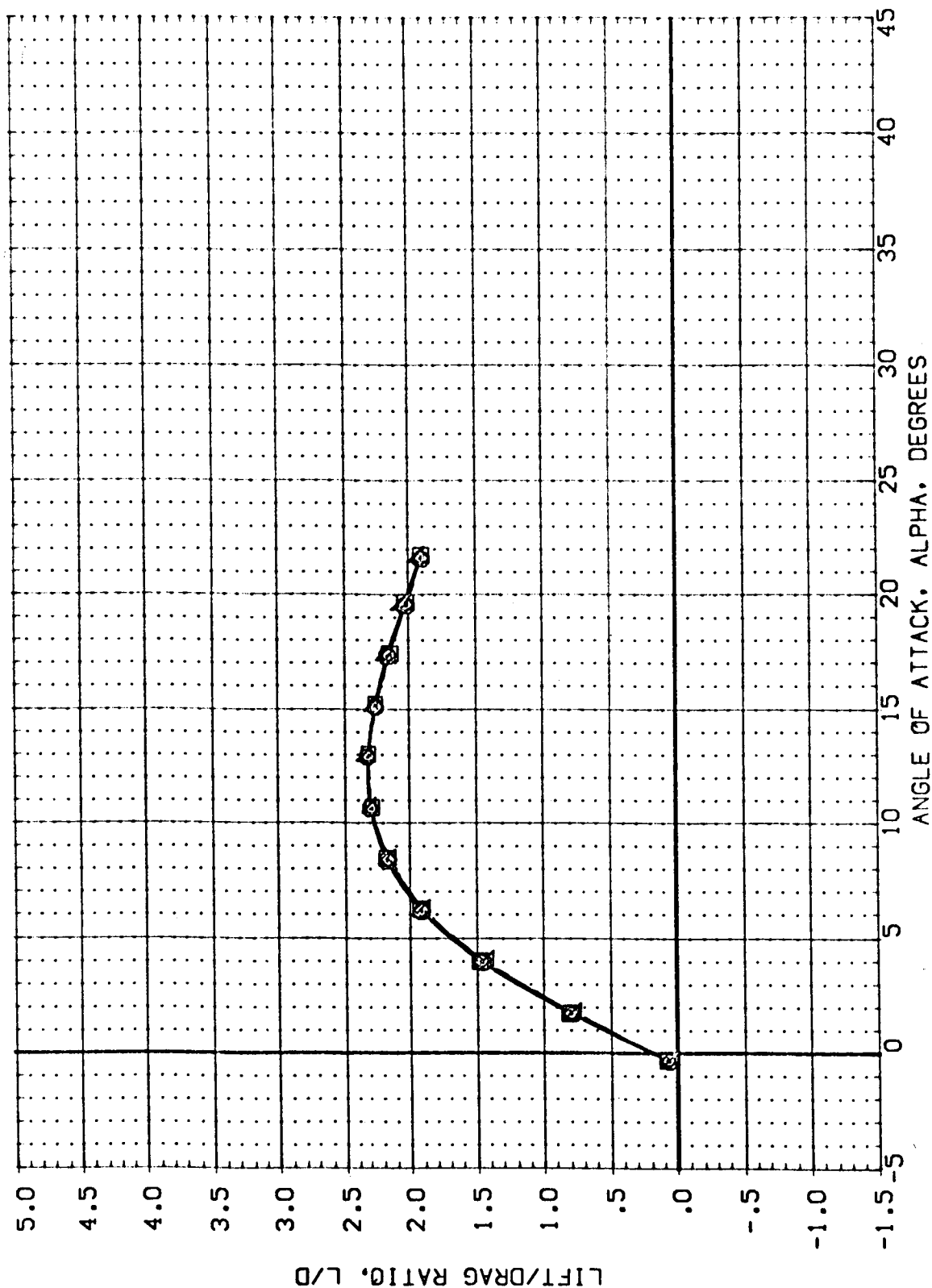


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

BETA	ELEV'R	SPOBRK	BOFLAP	REFERENCE INFORMATION	SG.FIN.
.000	.000	.000	SAFE	2690	.000
.000	.000	.000	.	474	.000
.000	.000	.000	SAFE	836	.000
.000	.000	.000	SAFE	836	.000
.000	.000	.000	X333	838	.000
.000	.000	.000	X333	.	.000
.000	.000	.000	X333	.	.000
.000	.000	.000	Z333	.	.000
.000	.000	.000	SCALE	.	.000

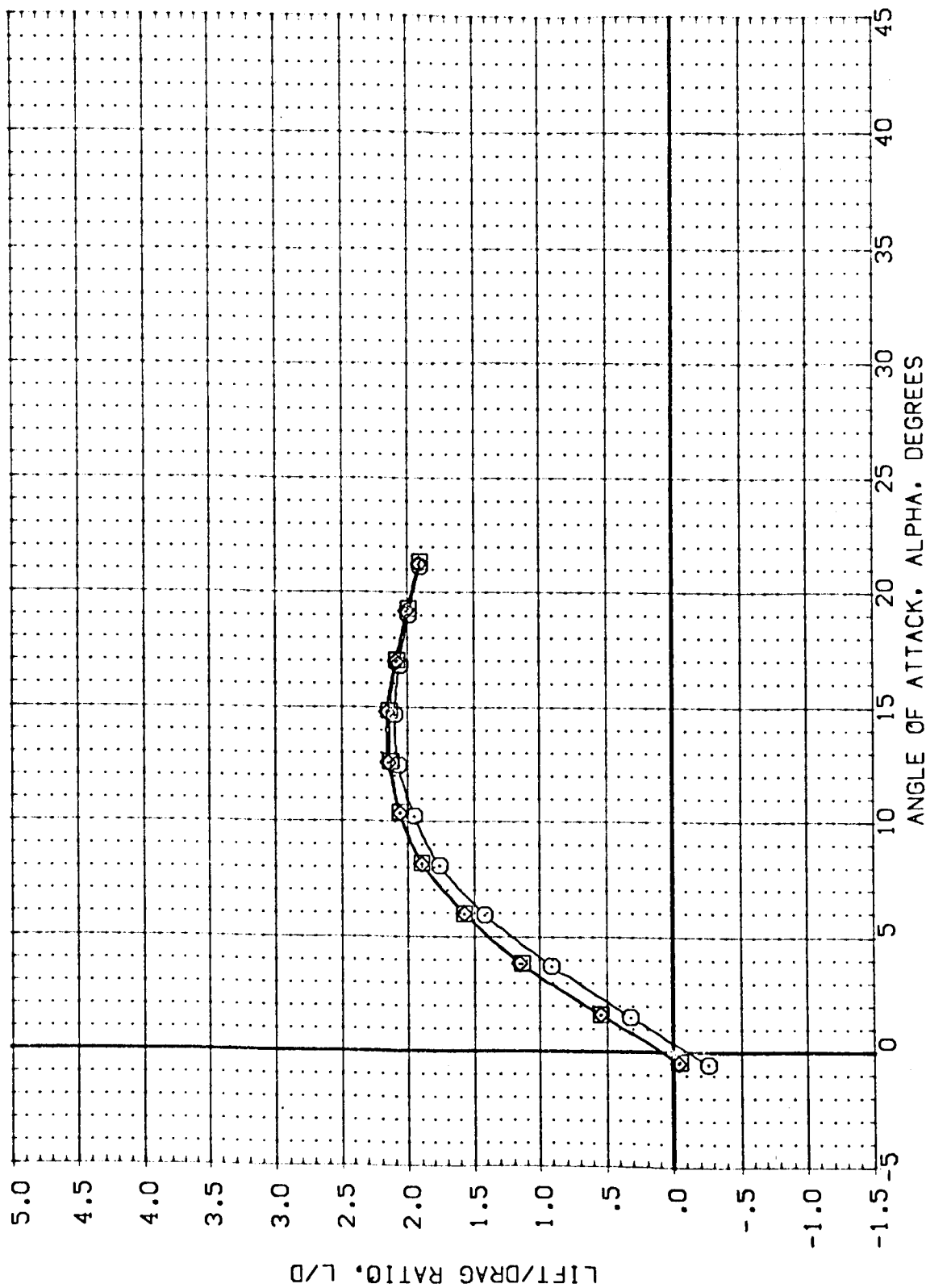
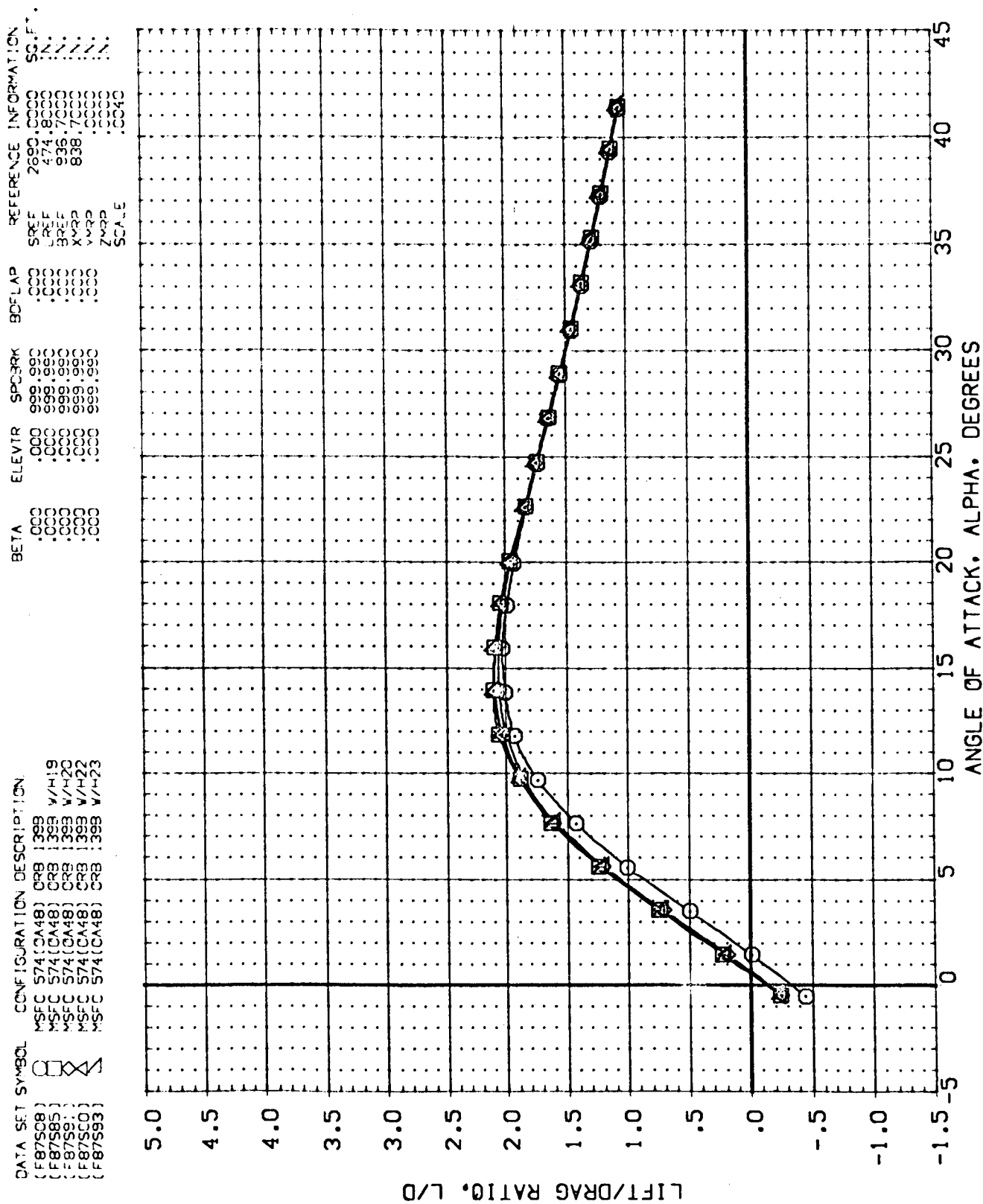
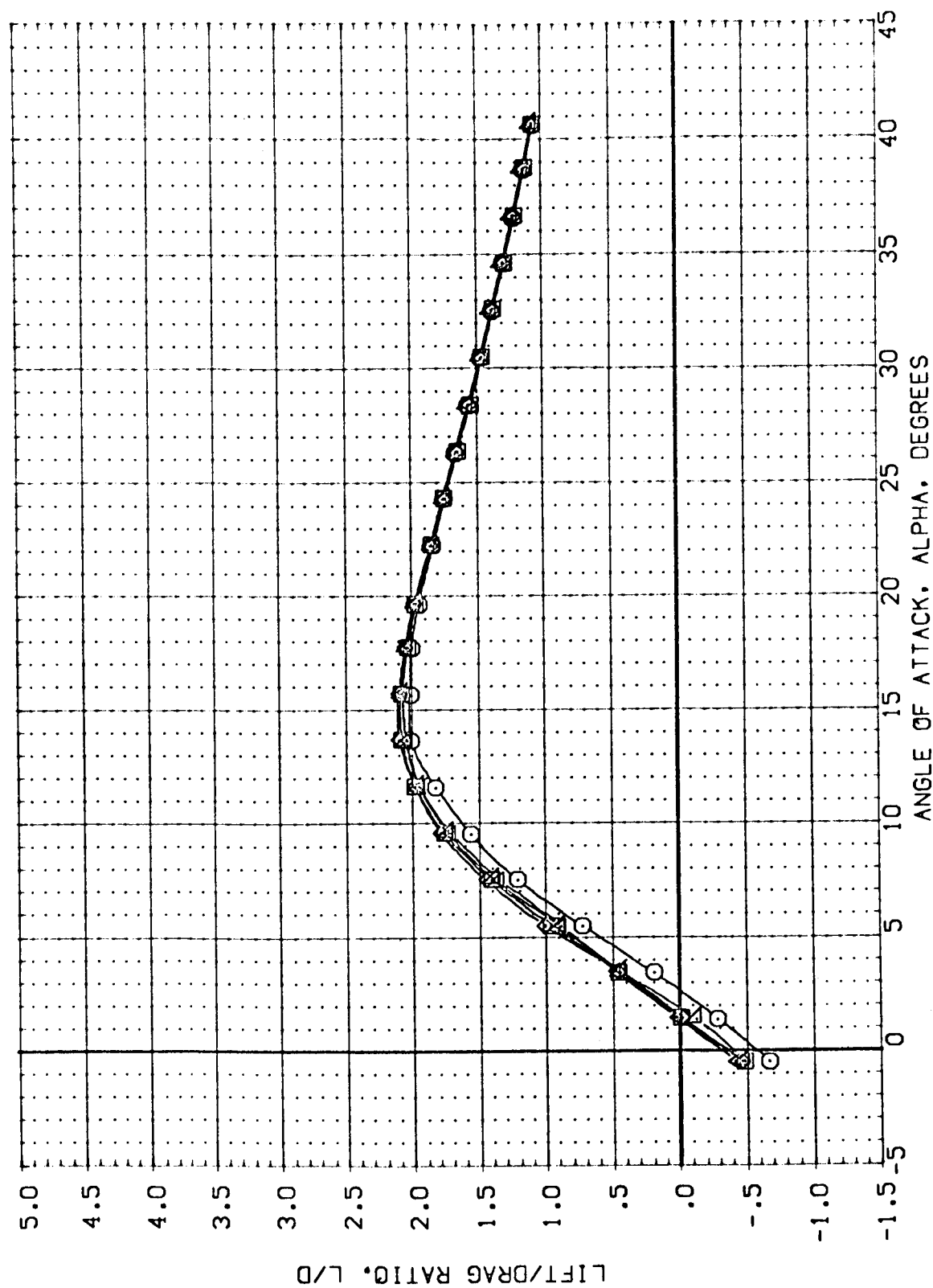


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

COMMACH = .95



```
CE3MACH = 2.09
```

[illegible]FIG. 13
EFFECT OF TRIMMER ON ORBITER 139B

CEJMACU = 4.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87508) MSEC 574(CA48) CR3 1393
 (F87585) MSEC 574(CA48) CR3 1393 V/H19
 (F87591) MSEC 574(CA48) CR3 1393 V/H20
 (F87593) DATA NOT AVAILABLE
 (F87593) MSEC 574(CA48) CR3 1393 V/H23

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SCALE
 .000 .000 999.990 .000 SREF 2690.0000 .000
 .000 .000 999.990 .000 LREF 474.8000 .000
 .000 .000 999.990 .000 BREF 936.7000 .000
 .000 .000 999.990 .000 YMRP 838.7000 .000
 .000 .000 999.990 .000 ZMRP .0000 .000
 .000 .000 999.990 .000 SCALE .0000 .000

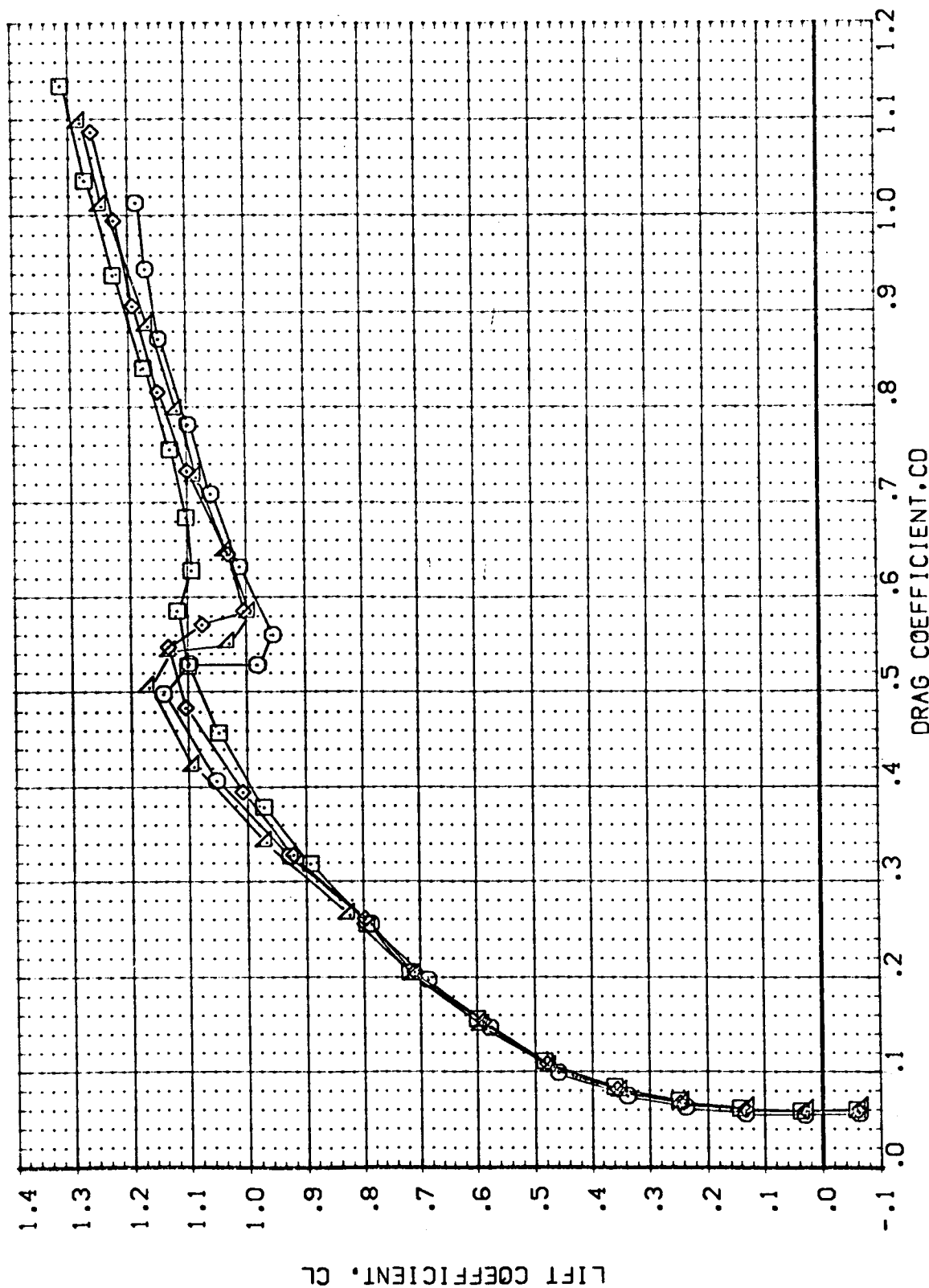


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION SQ.FT.

(F87SC8) MSFC 574(CA48) CRB 1393 .000 .000 999.990 .000 2690.0000 2690.0000

(F87S85) MSFC 574(CA48) CRB 1393 V/H19 .000 .000 999.990 .000 474.8000 474.8000

(F87S91) MSFC 574(CA48) CRB 1393 V/H20 .000 .000 999.990 .000 938.7000 938.7000

(F87SC0) DATA NOT AVAILABLE .000 .000 999.990 .000 838.7000 838.7000

(F87S93) MSFC 574(CA48) CRB 1393 V/H23 .000 .000 999.990 .000 .0000 .0000

SCALE .0040

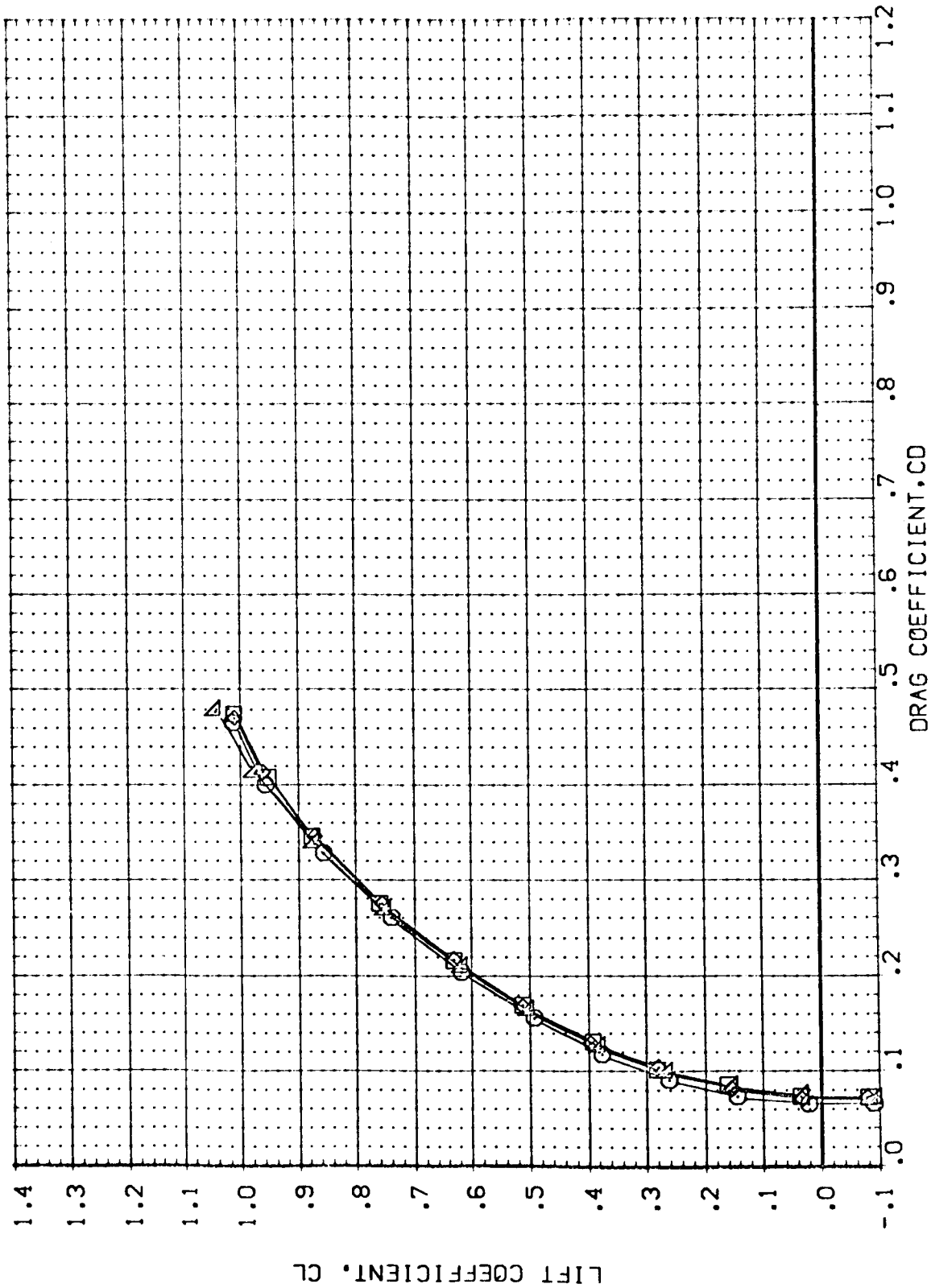


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(3)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCGRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) CRB 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) CRB 1399 V/H20	.000	.000	999.990	.000	BREF 836.7000
(F87511)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87512)	MSFC 574(CA48) CRB 1398 V/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

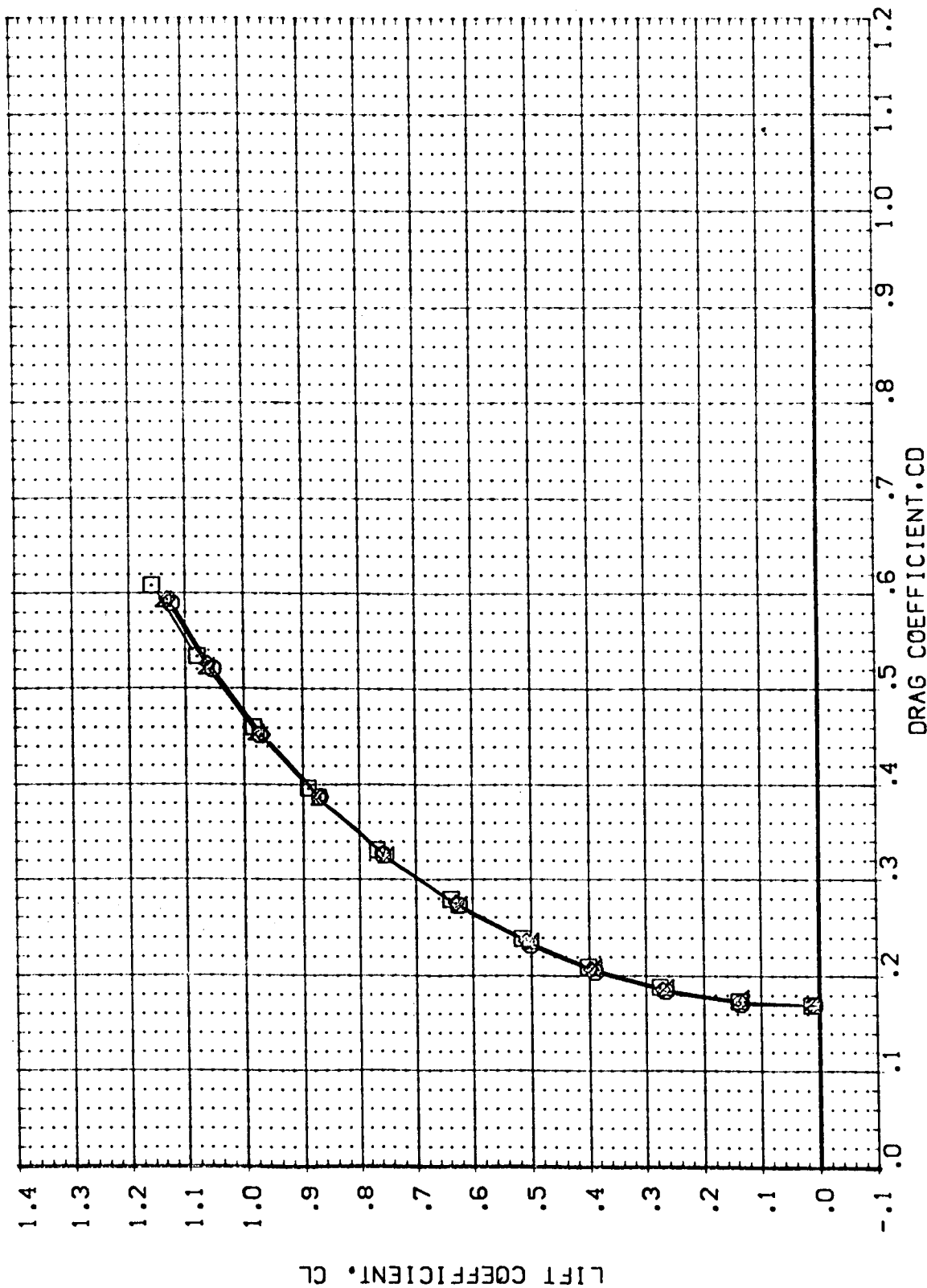
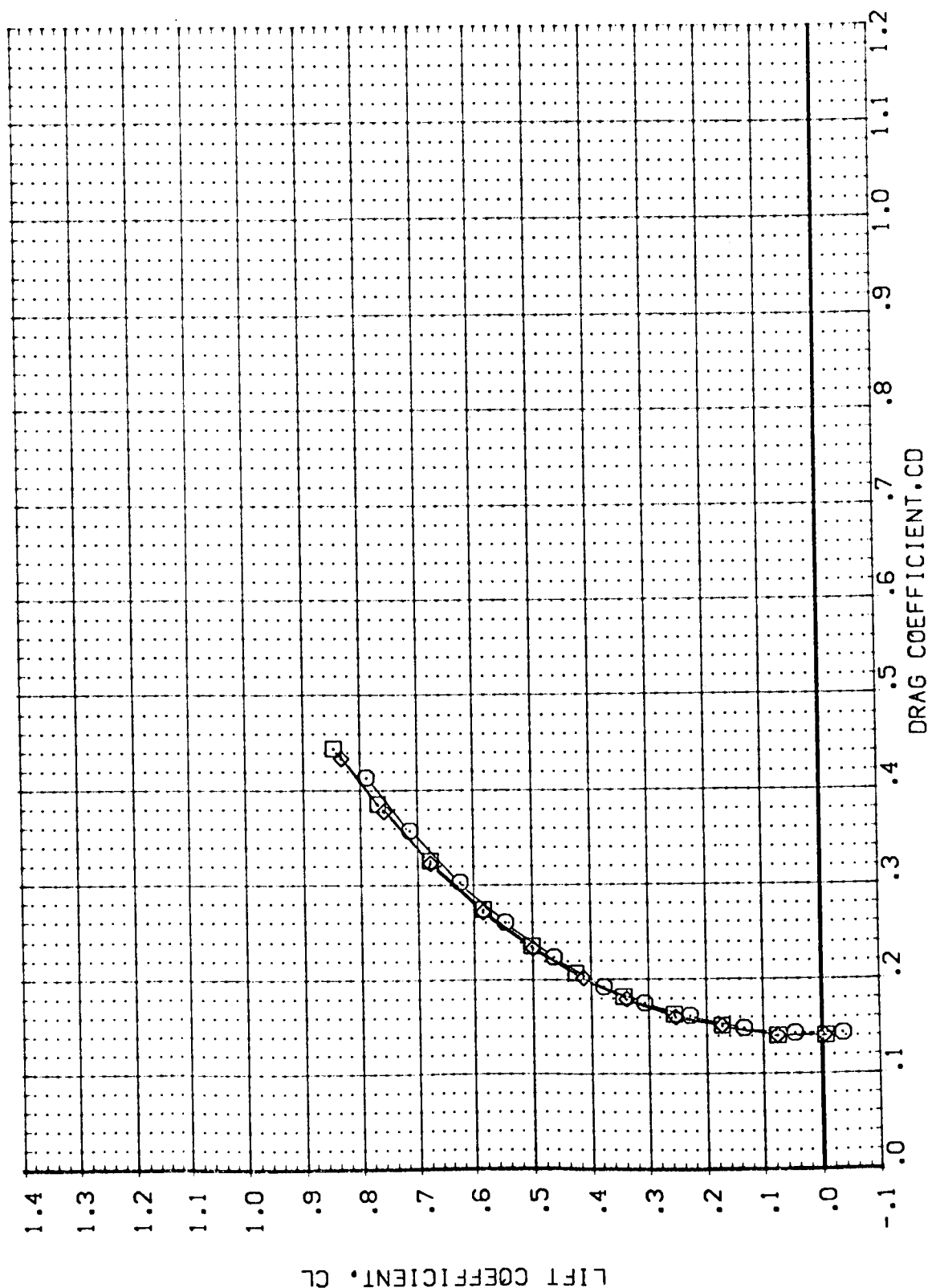


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

[illegible]FIG. 13
EFFECT OF TRIMMER ON ORBITER 139B

COMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	LREF 474.8000
(F87581)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	BREF 936.7000
(F875C0)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

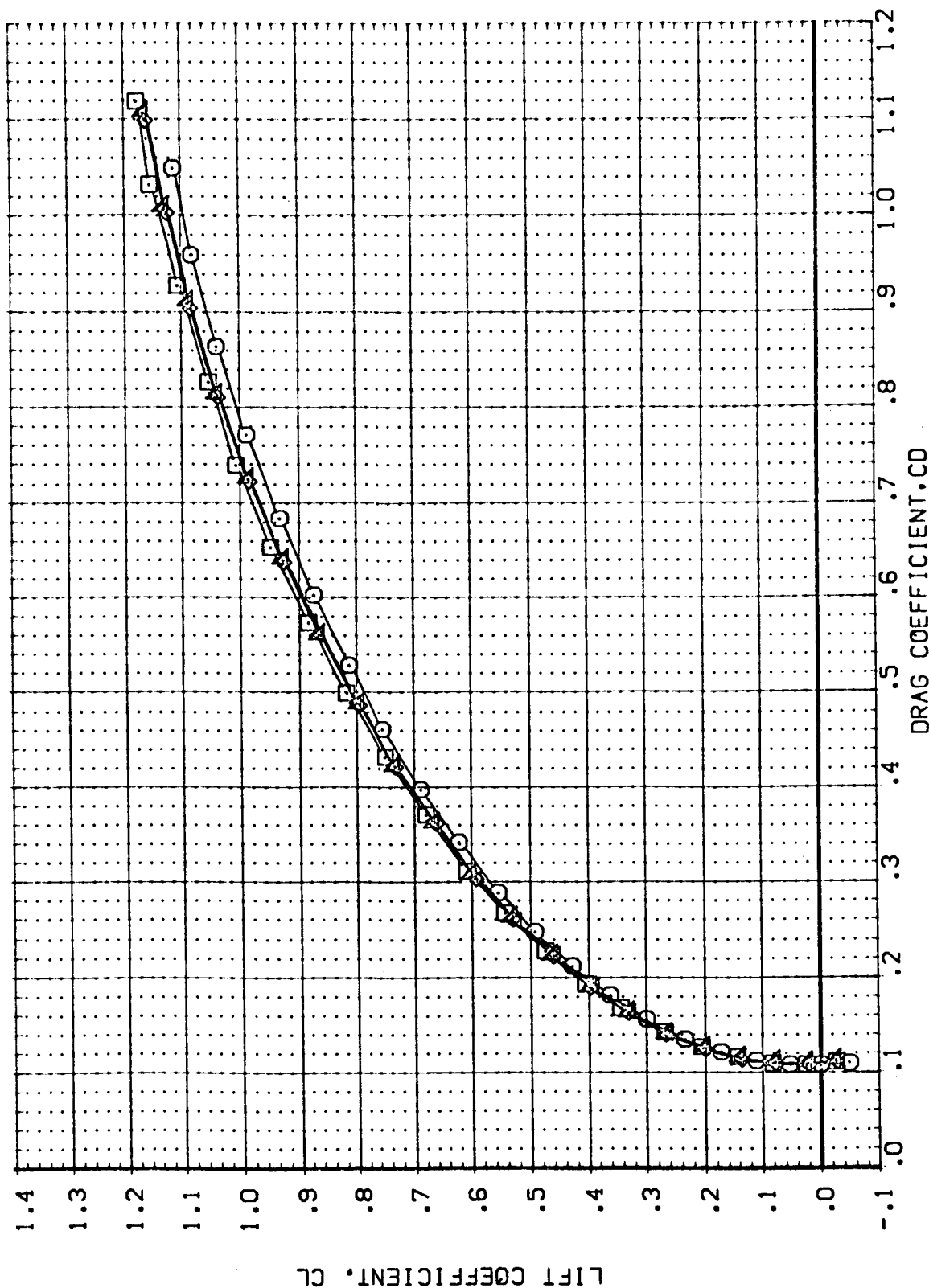


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	SREF 2690.0000
(F87SC9)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	LREF 474.8000
(F87SC10)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	BREF 936.7000
(F87SC11)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	XMRP 838.0000
(F87SC12)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	YMRP .0000
(F87SC13)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

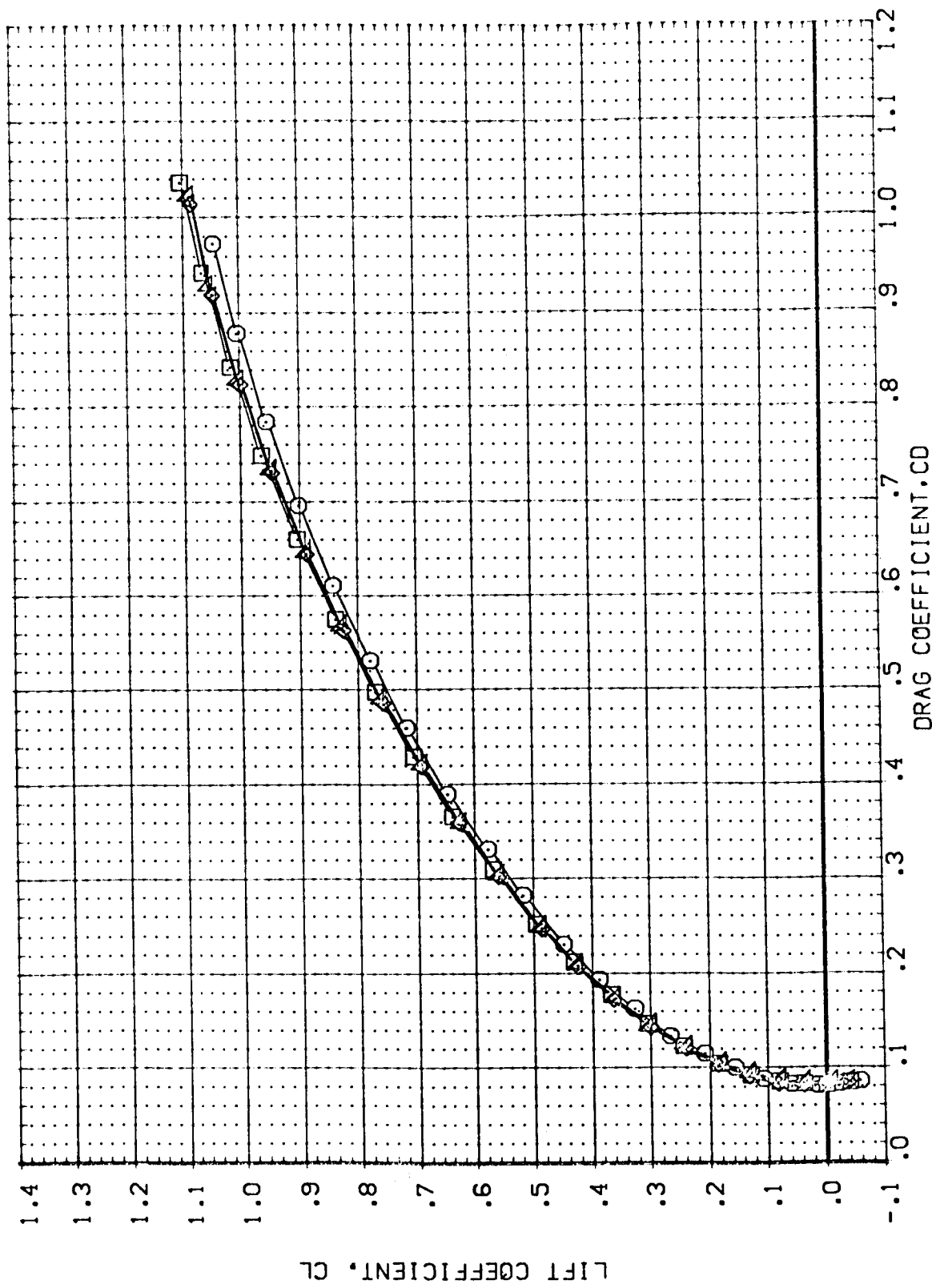


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F87SC) MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(S87508) MSFC 574(CA48) CR3 139B

(S87509) MSFC 574(CA48) CR3 139B W/H19

(S87510) MSFC 574(CA48) CR3 139B W/H20

(S87511) DATA NOT AVAILABLE

(S87512) MSFC 574(CA48) CR3 139B W/H23

BETA ELEVTR SPDRBK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000

.000 .000 999.990 .000 LREF 474.8000

.000 .000 999.990 .000 BREF 936.7000

.000 .000 999.990 .000 XMRP 864.5000

.000 .000 999.990 .000 YMRP .0000

.000 .000 999.990 .000 ZMRP .0000

SCALE .0040

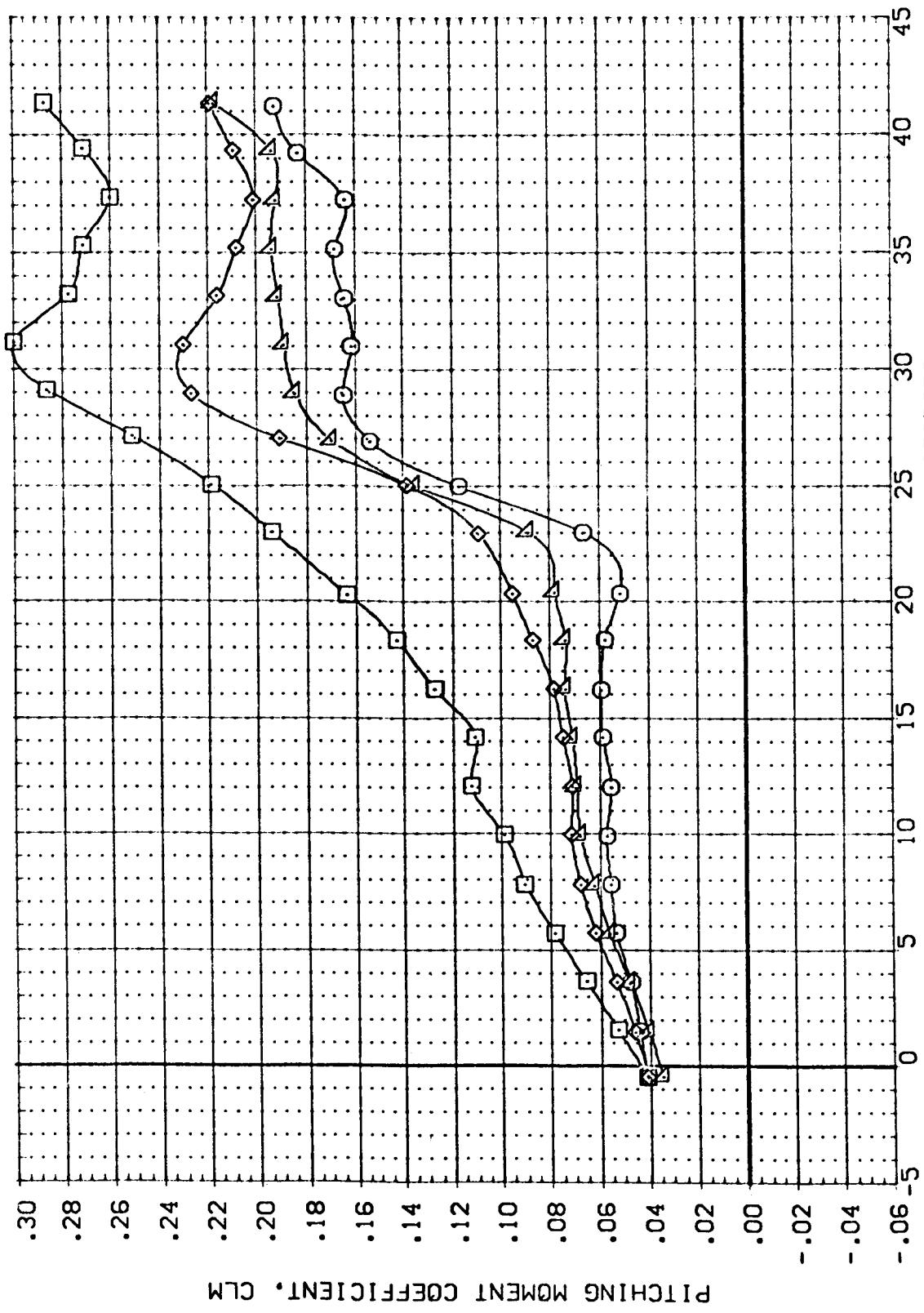


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BDFLAP	REFERENCE INFORMATION
(G87528)	MSFC 574(CA48) CRB 1398	.000	.000	.999.990	.000	SREF 2690.0000 SCF.1
(G87529)	MSFC 574(CA48) CRB 1398 W/H19	.000	.000	.999.990	.000	UREF 474.8000
(G87530)	MSFC 574(CA48) CRB 1398 W/H20	.000	.000	.999.990	.000	BREF 936.7000
(G87531)	DATA NOT AVAILABLE	.000	.000	.999.990	.000	XMRP 854.5000
(G87532)	MSFC 574(CA48) CRB 1398 W/H23	.000	.000	.999.990	.000	VMRP .0000
(G87533)		.000	.000	.999.990	.000	ZMRP .0000
						SCALE .0040

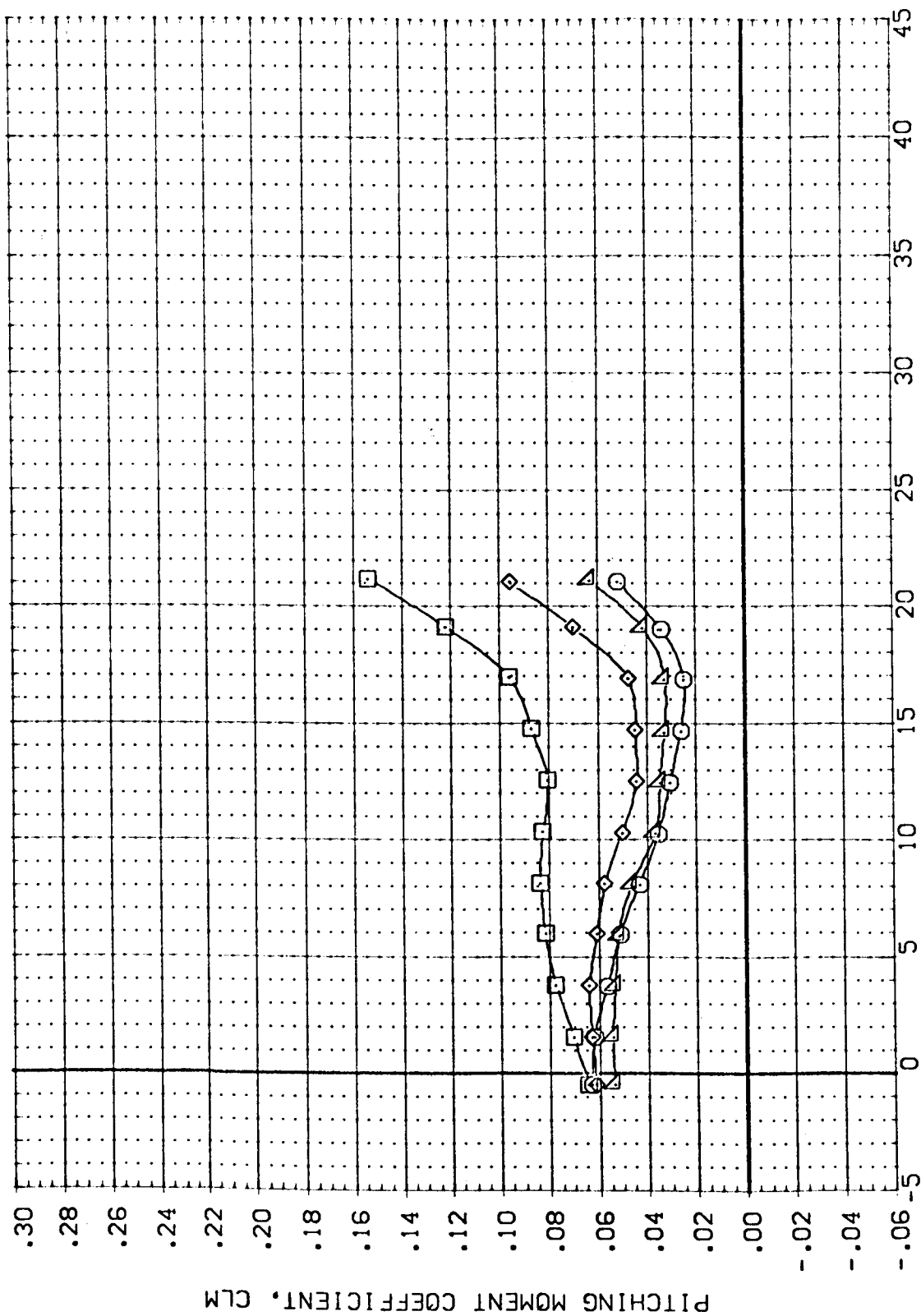


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{C87SC8}	MSEC 574(CA48) CRB {399	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
{C87S85}	MSEC 574(CA48) CRB {393 V/H19	.000	.000	999.990	.000	LREF 474.8000
{C87S91}	MSEC 574(CA48) CRB {393 V/H20	.000	.000	999.990	.000	BREF 936.7000
{C87SC0}	DATA NOT AVAILABLE	.000	.000	999.990	.000	XREF 864.5000
{C87S93}	MSEC 574(CA48) CRB {399 V/H23	.000	.000	999.990	.000	WREF .0000
						ZREF .0000
						SCALE .0010

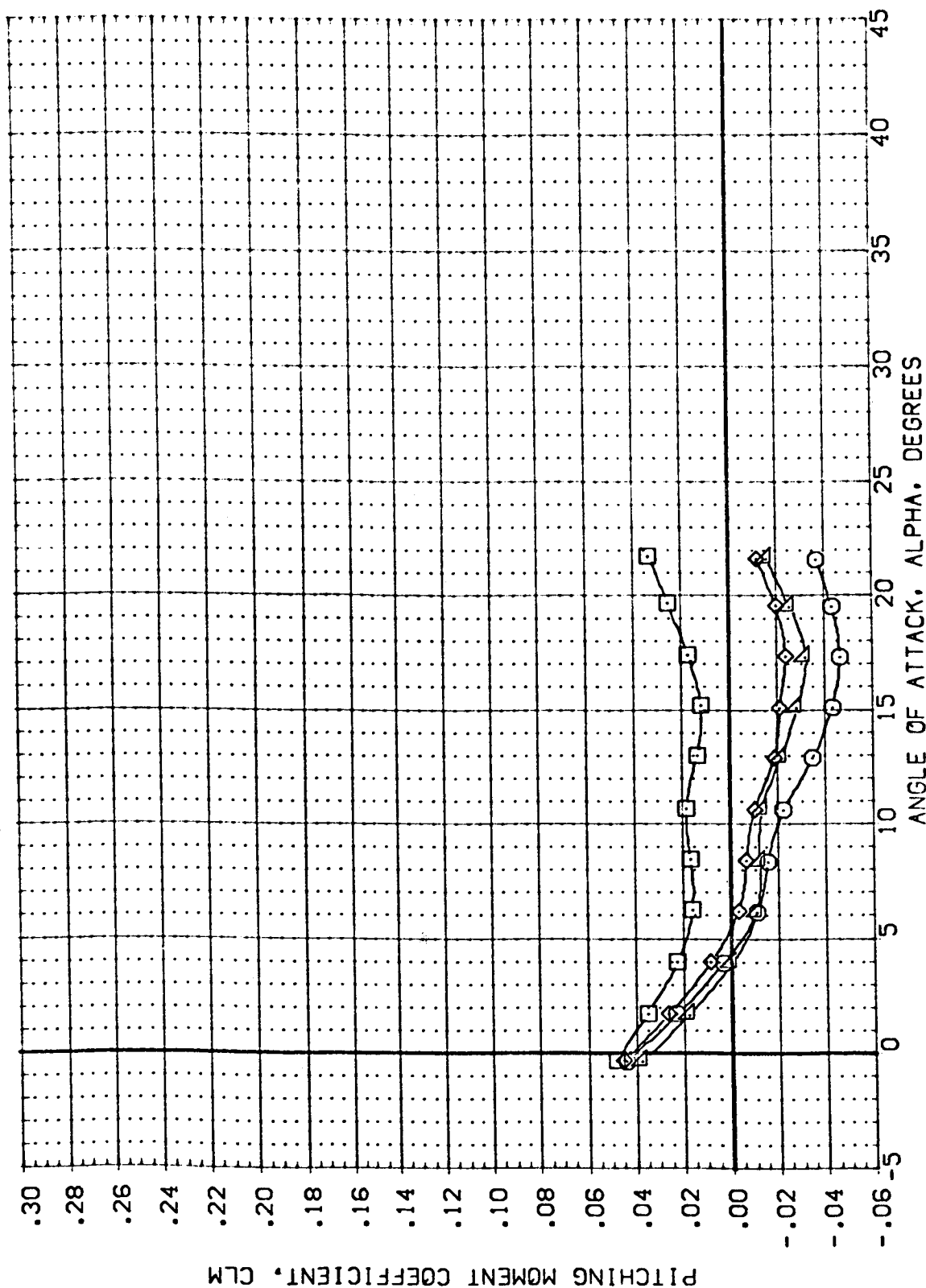
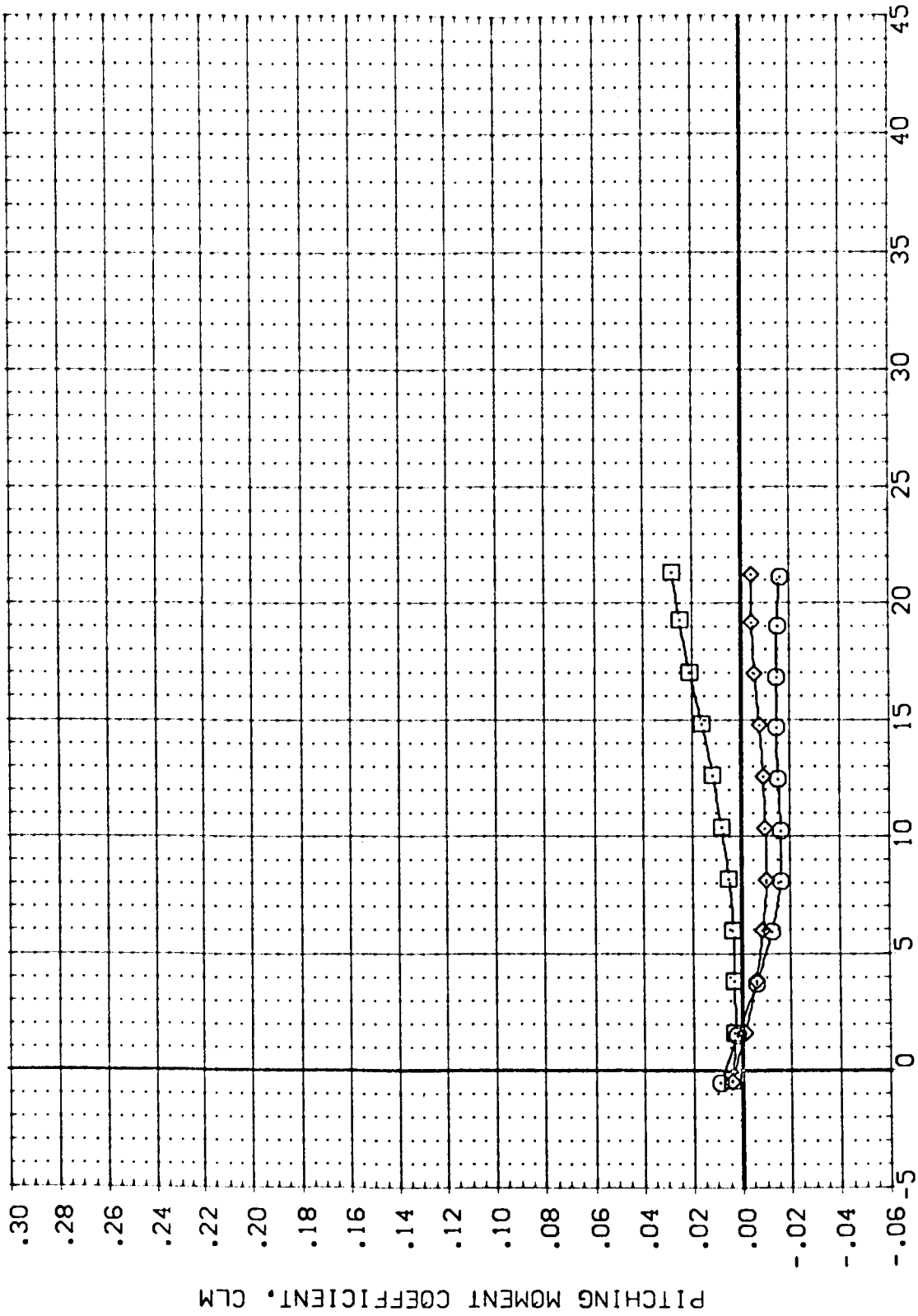


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (G87508) MSFC 574(CA48) CRB 139B
 (G87509) MSFC 574(CA48) CRB 139B W/H19
 (G87510) MSFC 574(CA48) CRB 139B W/H20
 (G87511) DATA NOT AVAILABLE
 (G87512) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.FT.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 864.5000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0040



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

COY MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(887508)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000 SC.FY.
(887508)	MSFC 574(CA48) ORB 139B V/H19	.000	.000	999.990	.000	LREF 474.8000
(887508)	MSFC 574(CA48) ORB 139B V/H20	.000	.000	999.990	.000	BREF 936.7000
(887508)	MSFC 574(CA48) ORB 139B V/H22	.000	.000	999.990	.000	XREF 864.5000
(887508)	MSFC 574(CA48) ORB 139B V/H23	.000	.000	999.990	.000	VREF 864.5000
						ZREF 864.5000
						SCALE .0040

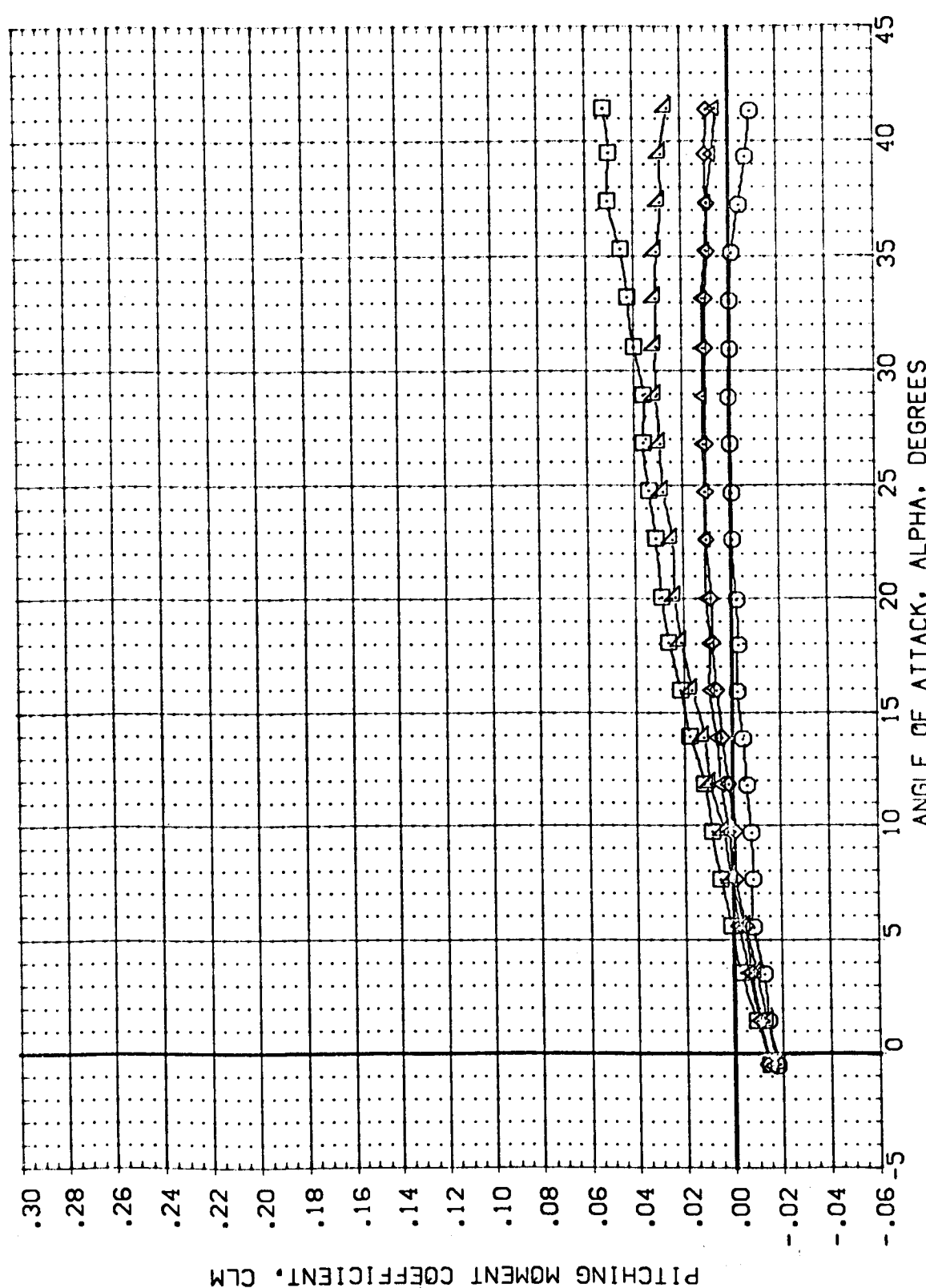


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(387508)	WSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SCALF.
(387509)	WSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	LRFF 474.8000
(387510)	WSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	BRFF 935.7000
(387511)	WSFC 574(CA48) CRB 139B W/H21	.000	.000	999.990	.000	XVBP 864.5000
(387512)	WSFC 574(CA48) CRB 139B W/H22	.000	.000	999.990	.000	ZVBP 1000.0000
(387513)	WSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	SCALE 10040

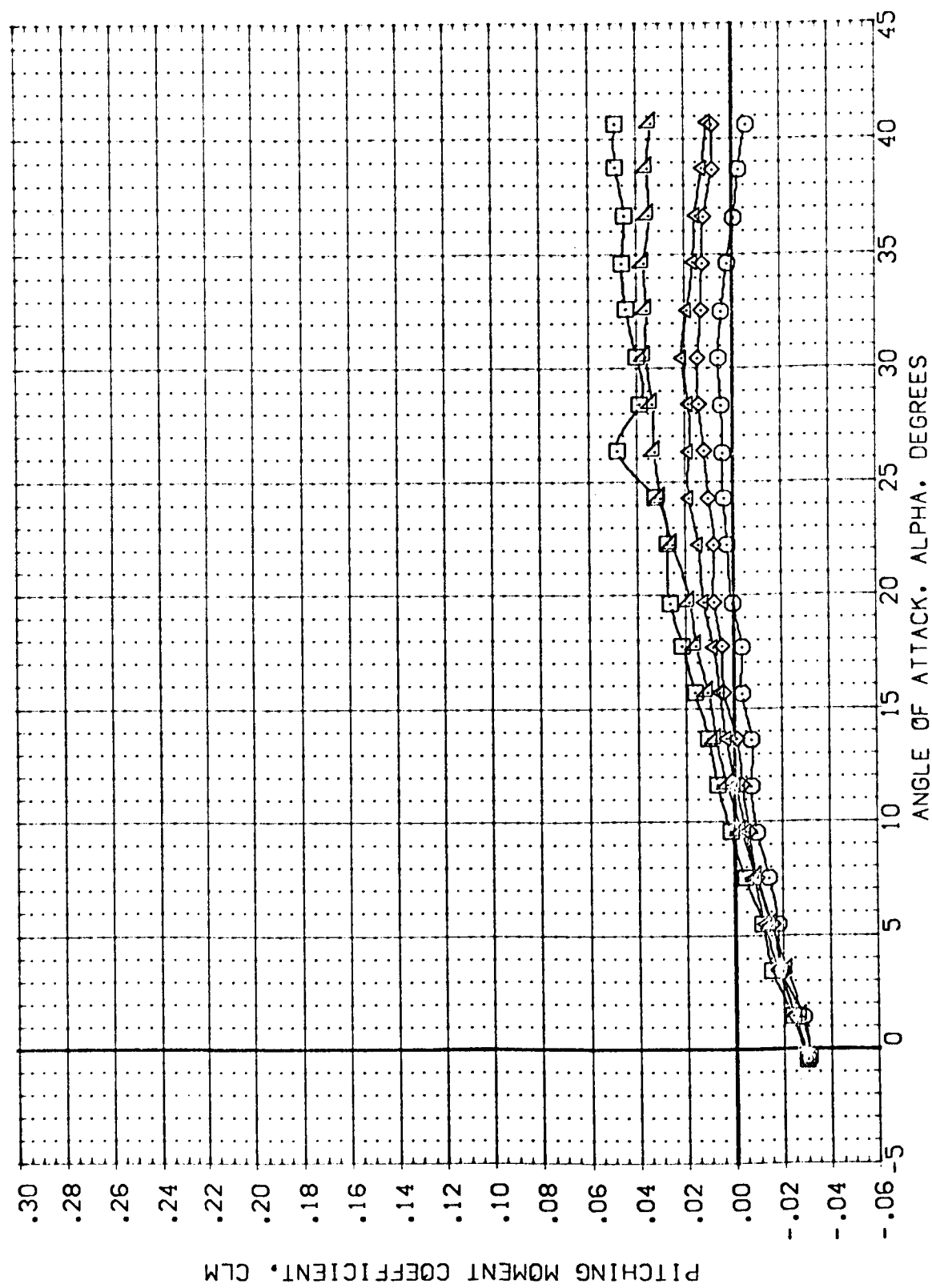
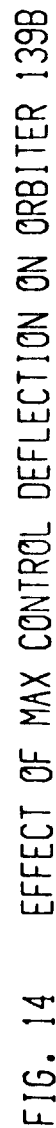


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

CDMACH = 4.96

[illegible]

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.999	.000	SPCF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 1398	.000	.000	999.999	.000	REF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1398	.000	15.000	999.999	13.750	REF 936.7000
(F87C18)	MSFC 574(CA48) CRB 1398	.000	-40.000	999.999	-14.250	REF 838.7000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.999	-14.250	REF .0000
(F87C98)	DATA NOT AVAILABLE	.000	-20.000	999.999	-14.250	REF .0000
						SCALE .0040

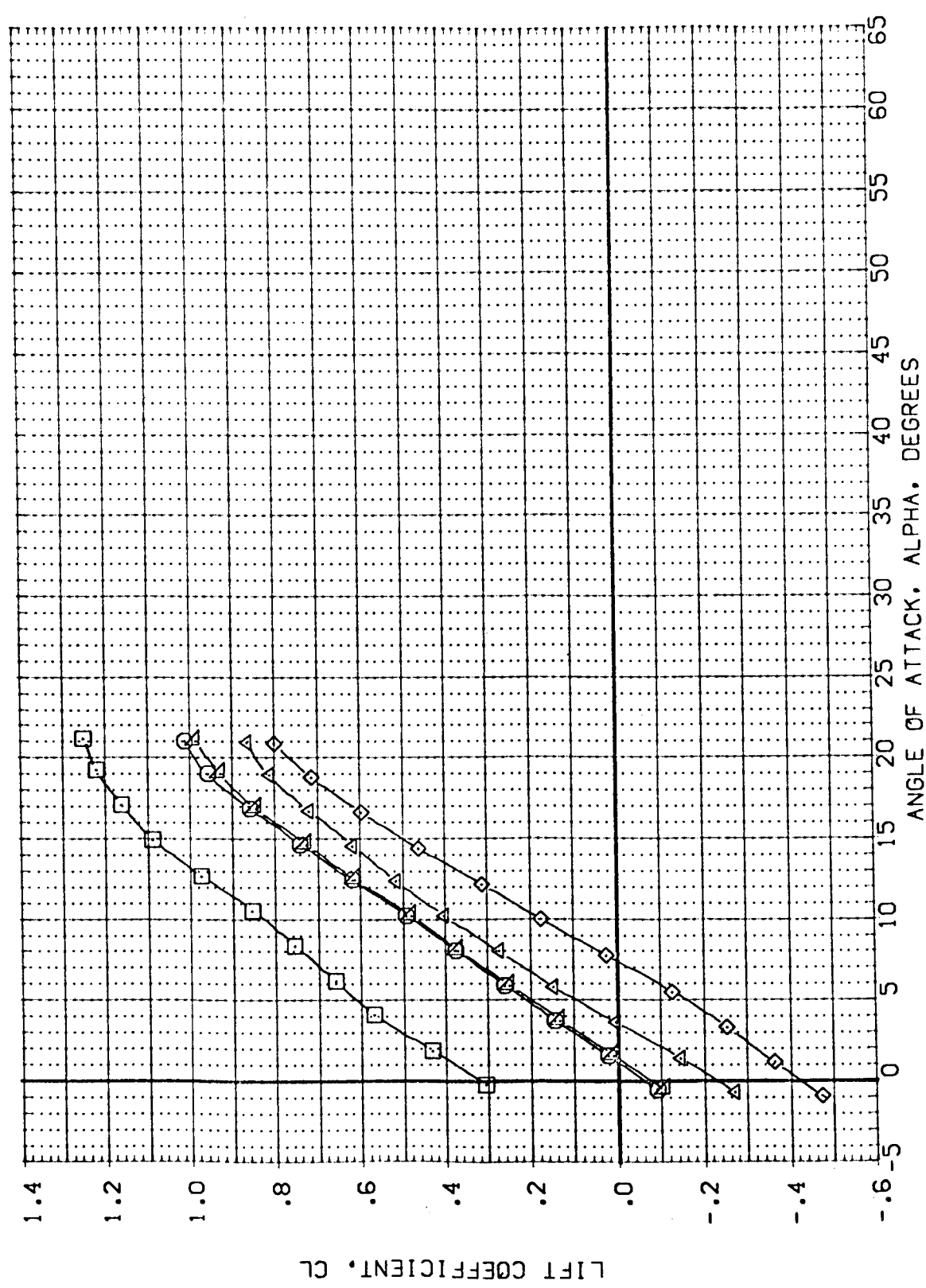


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(3)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87C15)	MSFC 574(CA48) CRB 1393	.000	15.000	999.990	13.750	UREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1393	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 1393	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

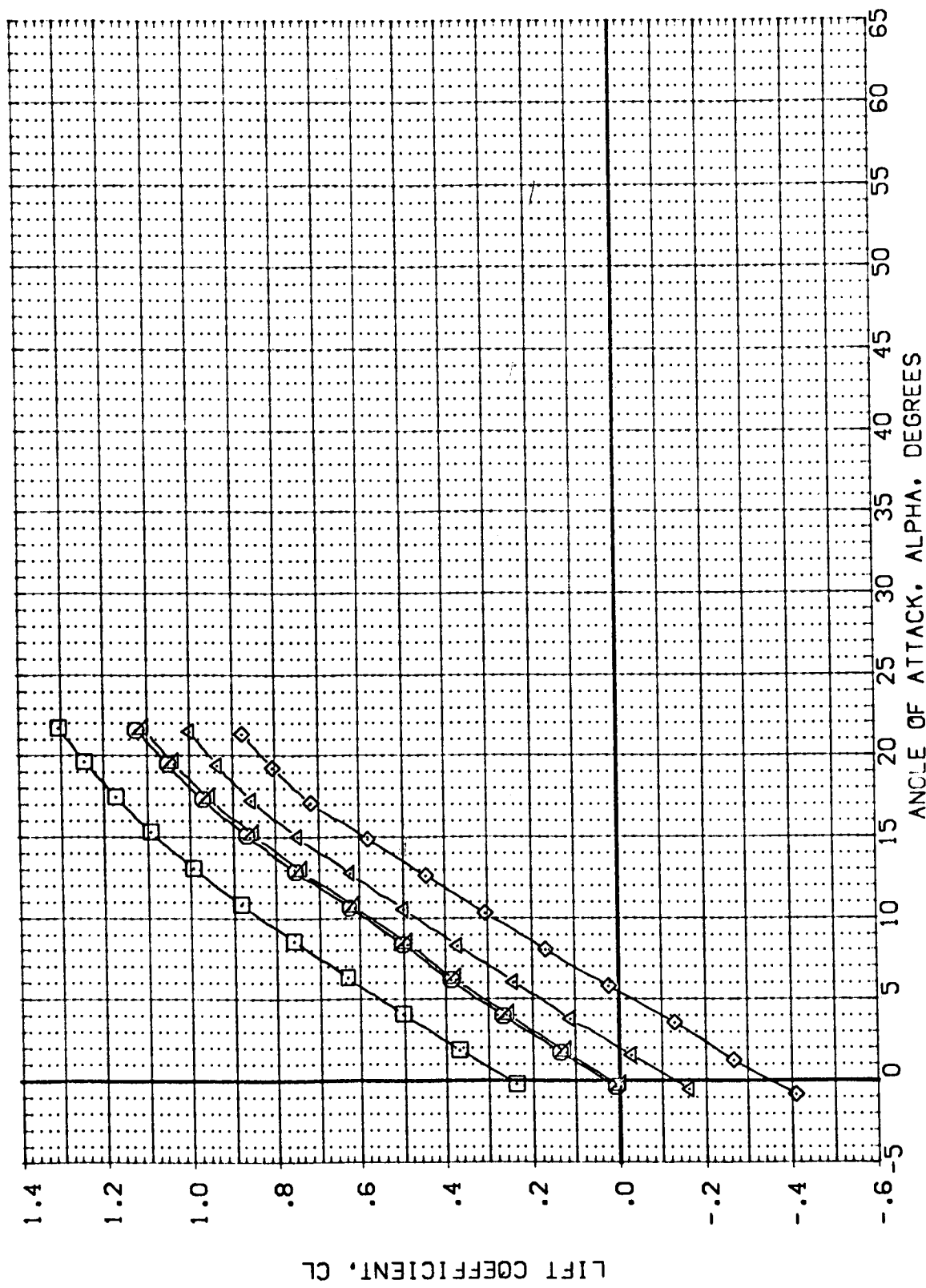


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87308)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87315)	MSFC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87321)	MSFC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87318)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XREF 838.7000
(F87324)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	YREF .0000
(F87358)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZREF .0000
						SCALE .0040

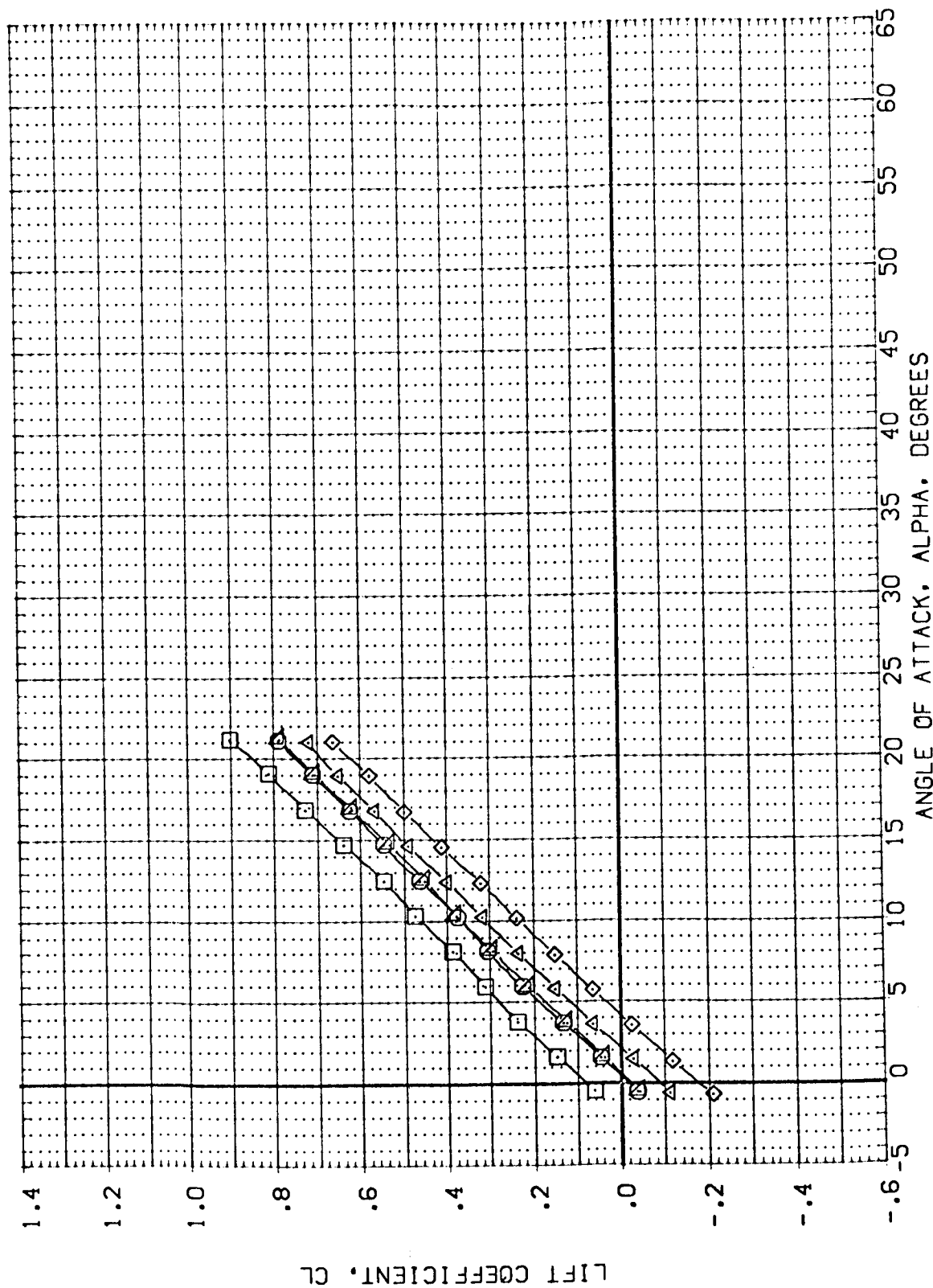


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	.000	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-13.750	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	-14.250	XREF 838.0000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	YREF 936.7000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZREF 936.7000
						SCALE .0010

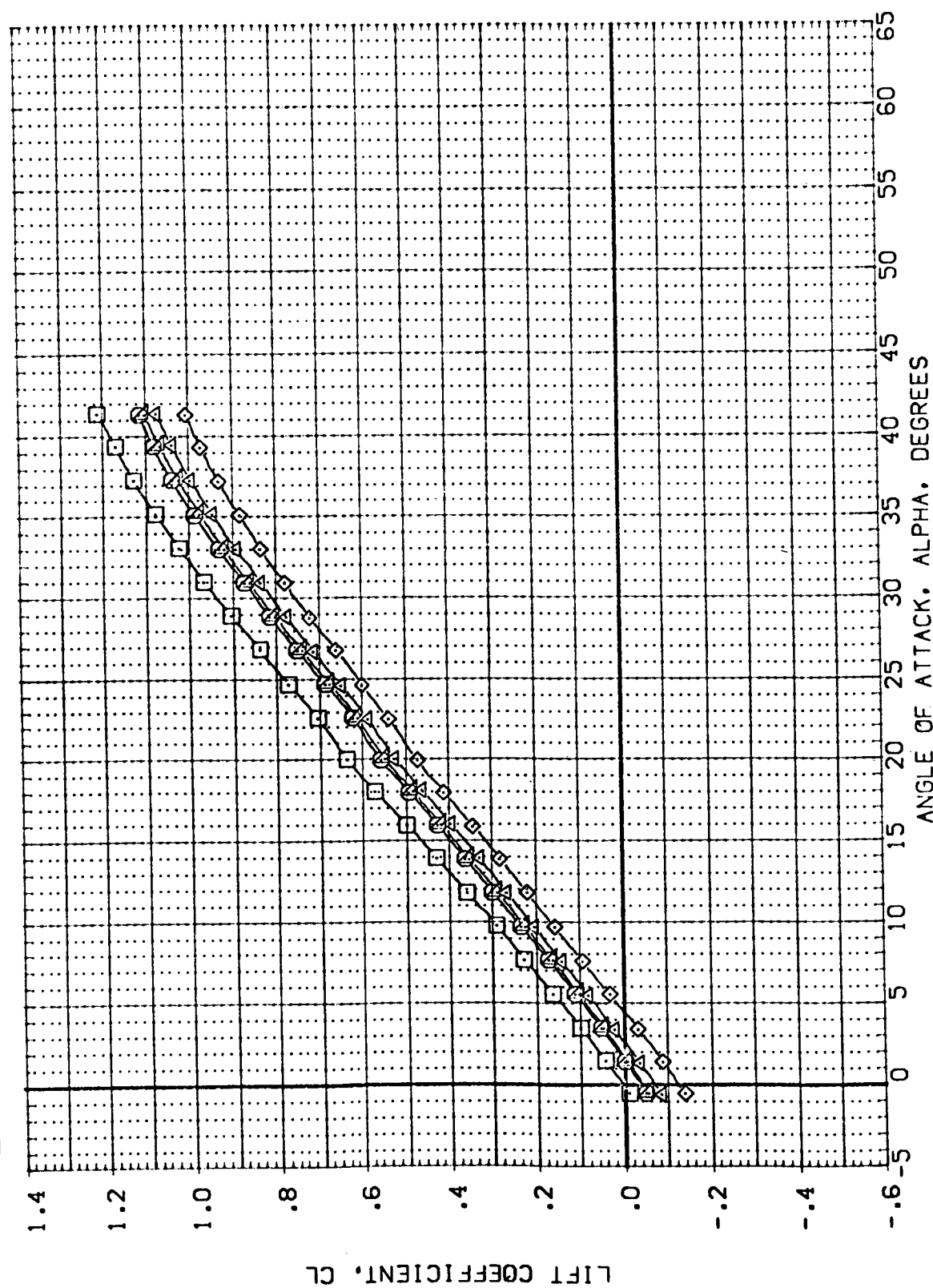


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(587C08)	MSFC	574(CA48)	CRB	139B
(587C15)	MSFC	574(CA48)	CRB	139B
(587C21)	MSFC	574(CA48)	CRB	139B
(587C18)	MSFC	574(CA48)	CRB	139B
(587C24)	MSFC	574(CA48)	CRB	139B
(587C59)	MSFC	574(CA48)	CRB	139B

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SREF	2690.0000	50. FT.
.000	15.000	999.990	13.750	LBFL	474.8000	10.00
.000	-40.000	999.990	-14.250	BRFL	635.7000	10.00
.000	-20.000	999.990	.000	XVAP	838.0000	10.00
.000	.000	999.990	-14.250	VVAP	.0000	10.00
.000	-20.000	999.990	-14.250	ZVAP	.0000	10.00
.000				SCALE	.0000	

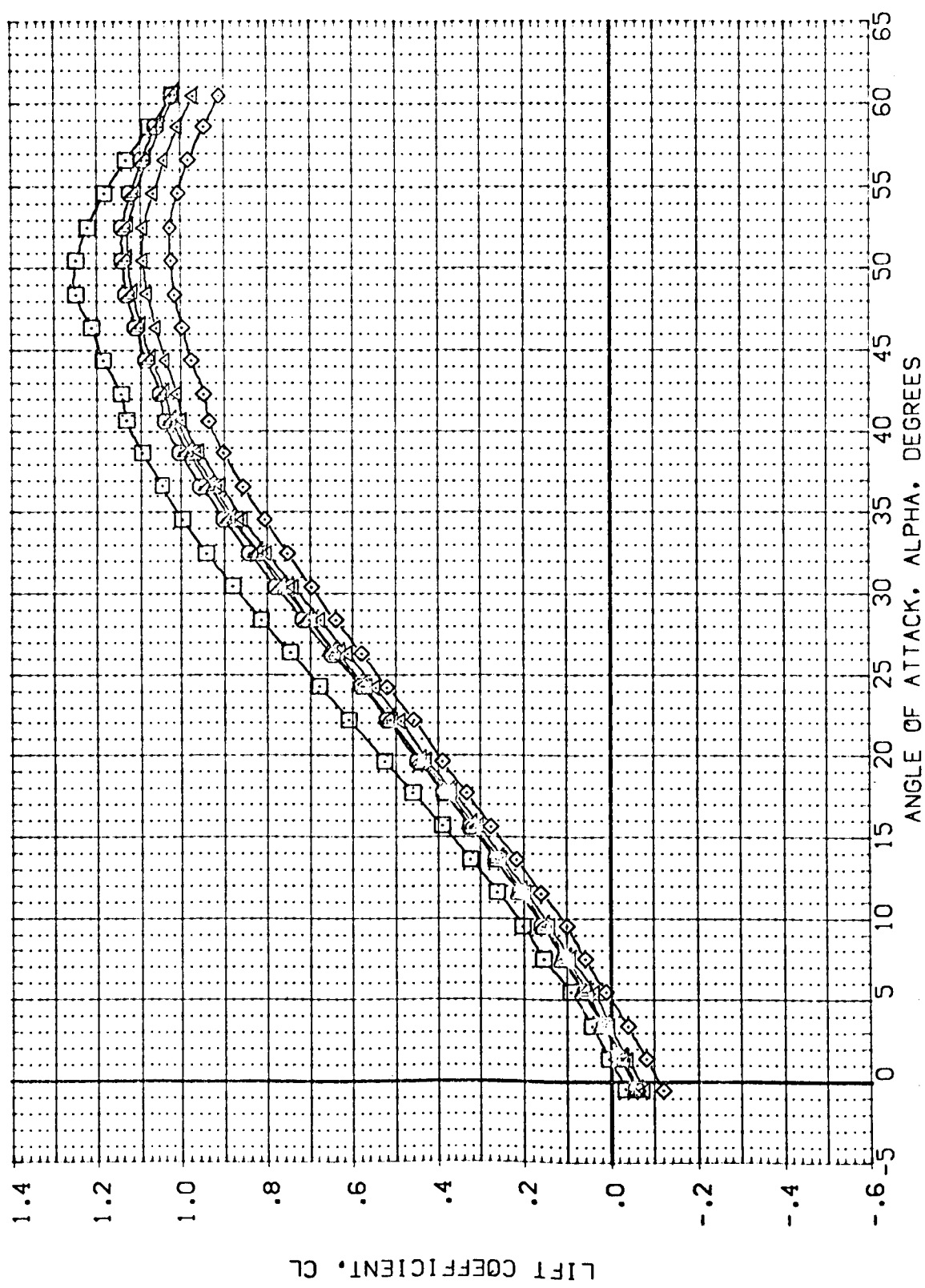


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187C08)	MSFC 574 (CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(187C15)	MSFC 574 (CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(187C21)	MSFC 574 (CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000
(187C18)	MSFC 574 (CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.7000
(187C24)	MSFC 574 (CA48) CRB 139B	.000	.000	999.990	-14.250	ZMRP .0000
(187S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	SCALE .0040

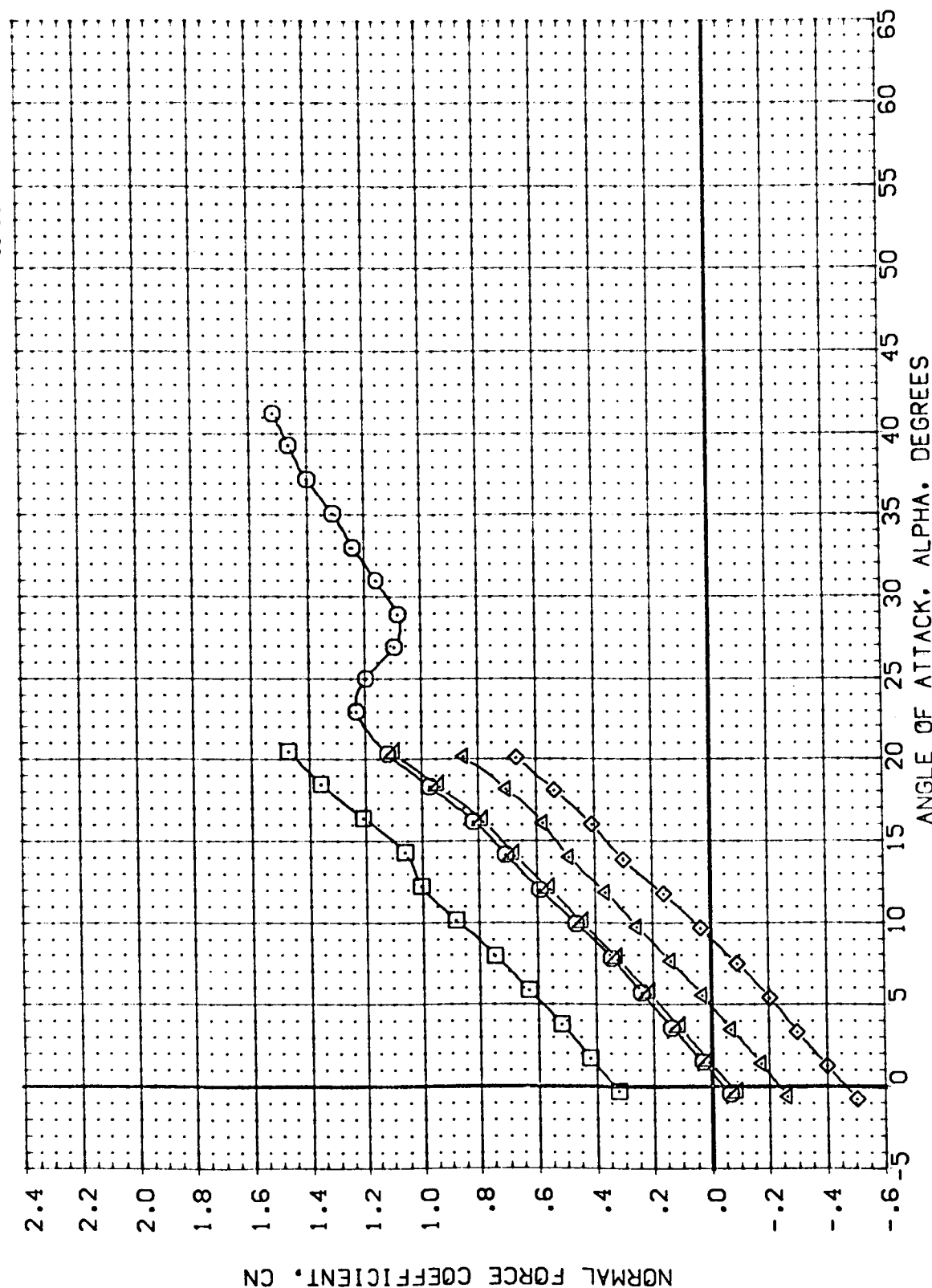


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 139B
 (F87C15) MSFC 574(CA48) CRB 139B
 (F87C21) MSFC 574(CA48) CRB 139B
 (F87C28) MSFC 574(CA48) CRB 139B
 (F87C24) MSFC 574(CA48) CRB 139B
 (F87C98) DATA NOT AVAILABLE

BETA ELEVTR SPDGRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 N.
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XREF 838.7000
 .000 .000 999.990 .000 YREF .0000
 .000 .000 999.990 -14.250 ZREF .0000
 .000 .000 999.990 .000 SCALE .0040

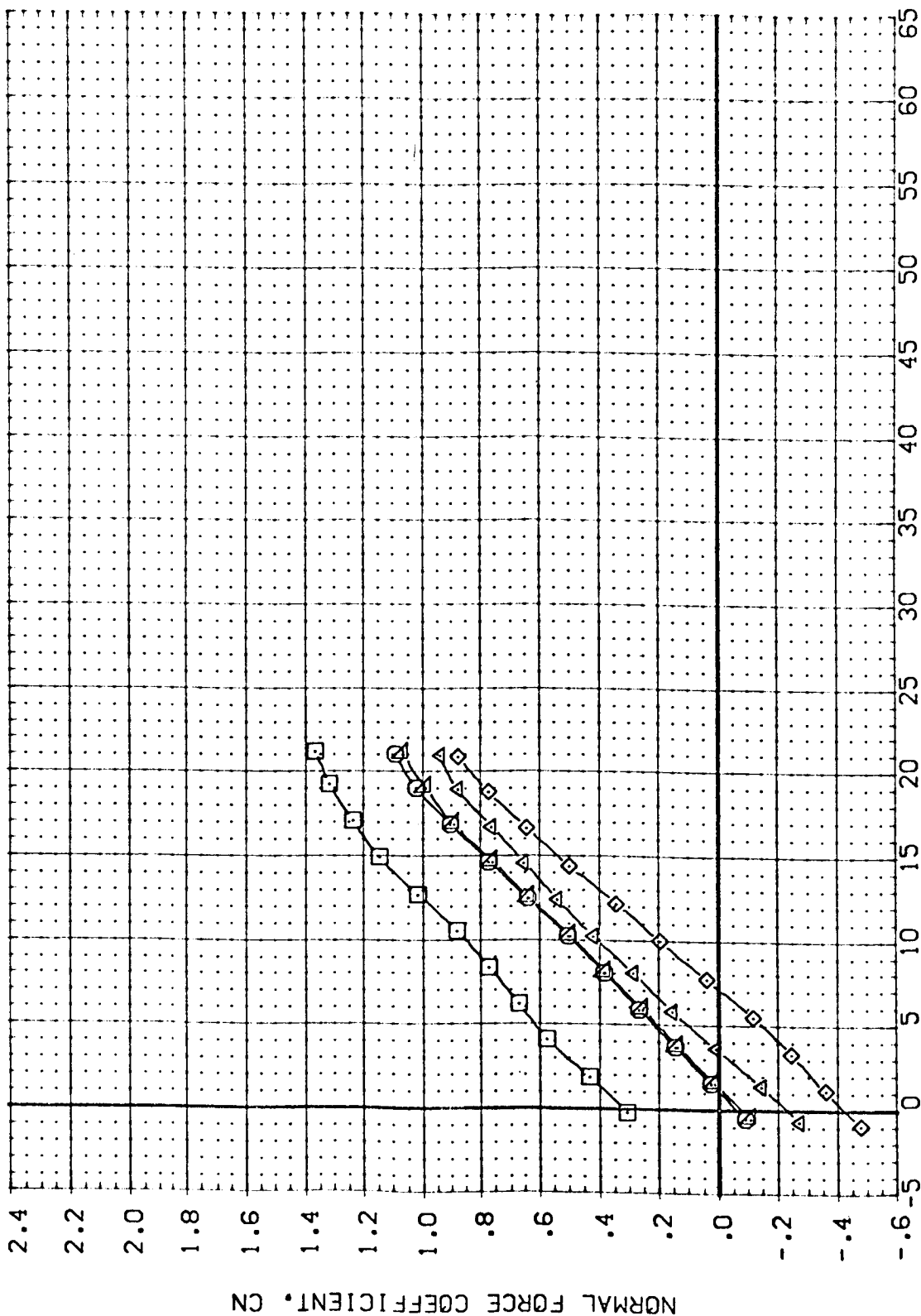


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CM48) CRB 1398	.000	.000	999.990	.000	2890.0000 SC.FT.
(F87C15)	MSFC 574(CM48) CRB 1398	.000	15.000	999.990	13.750	474.8000
(F87C21)	MSFC 574(CM48) CRB 1398	.000	-40.000	999.990	-14.250	936.7000
(F87C18)	MSFC 574(CM48) CRB 1398	.000	-20.000	999.990	.000	838.7000
(F87C24)	MSFC 574(CM48) CRB 1398	.000	.000	999.990	-14.250	.0000
(F87C24)	MSFC 574(CM48) CRB 1398	.000	-20.000	999.990	-14.250	.0000
(F87S98)	DATA NOT AVAILABLE					.0000

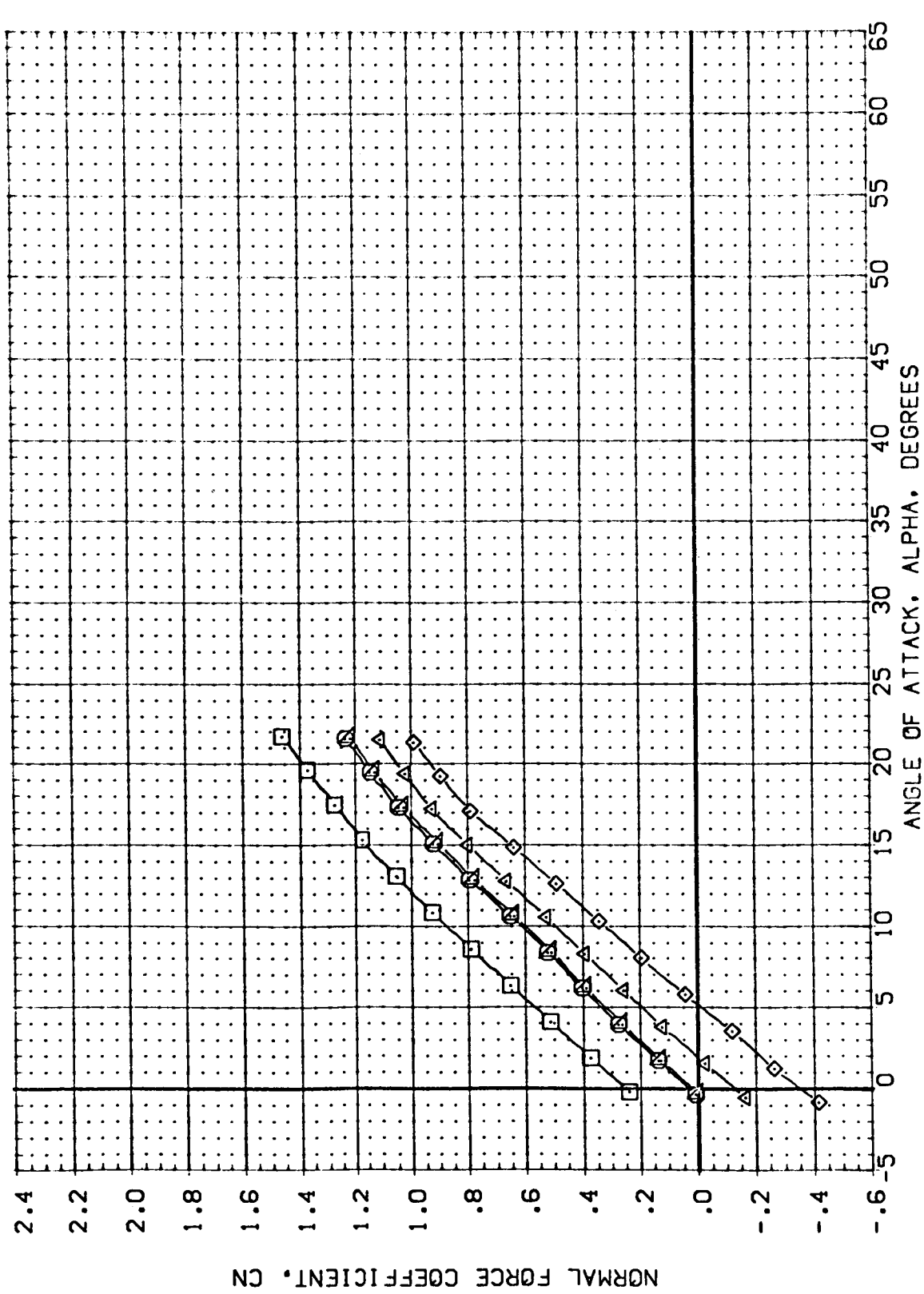


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

COMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 399
 (F87C15) MSFC 574(CA48) CRB 399
 (F87C21) MSFC 574(CA48) CRB 399
 (F87C28) MSFC 574(CA48) CRB 399
 (F87C24) MSFC 574(CA48) CRB 399
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SRFF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 938.7000
 .000 -20.000 999.990 .000 XREF 839.7000
 .000 .000 999.990 .000 YREF .0000
 .000 -20.000 999.990 -14.250 ZREF .0000
 .000 .000 .000 .000 SCALE .0000

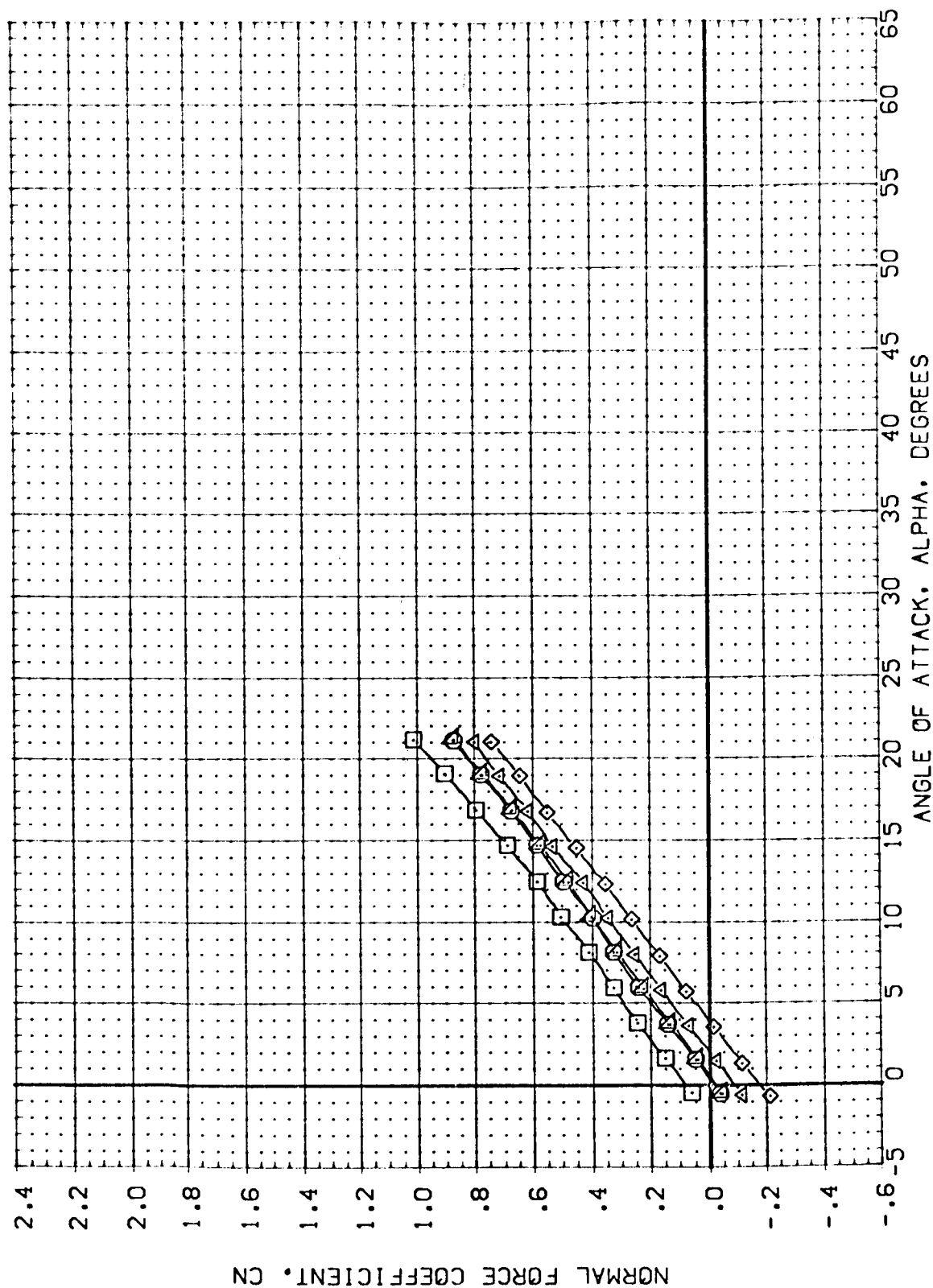


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

COMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	SRFF 2690.0000 SC.FT.
(F87C15)	MSFC 574(CA48) ORB 1393	.000	15.000	999.990	13.750	LRFF 474.8000
(F87C21)	MSFC 574(CA48) ORB 1398	.000	-40.000	999.990	-14.250	BRFF 936.7000
(F87C18)	MSFC 574(CA48) ORB 1398	.000	-20.000	999.990	.000	XRFF 838.7000
(F87C24)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	-14.250	WRFF .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	7WRFF .0000

SCALE .0040

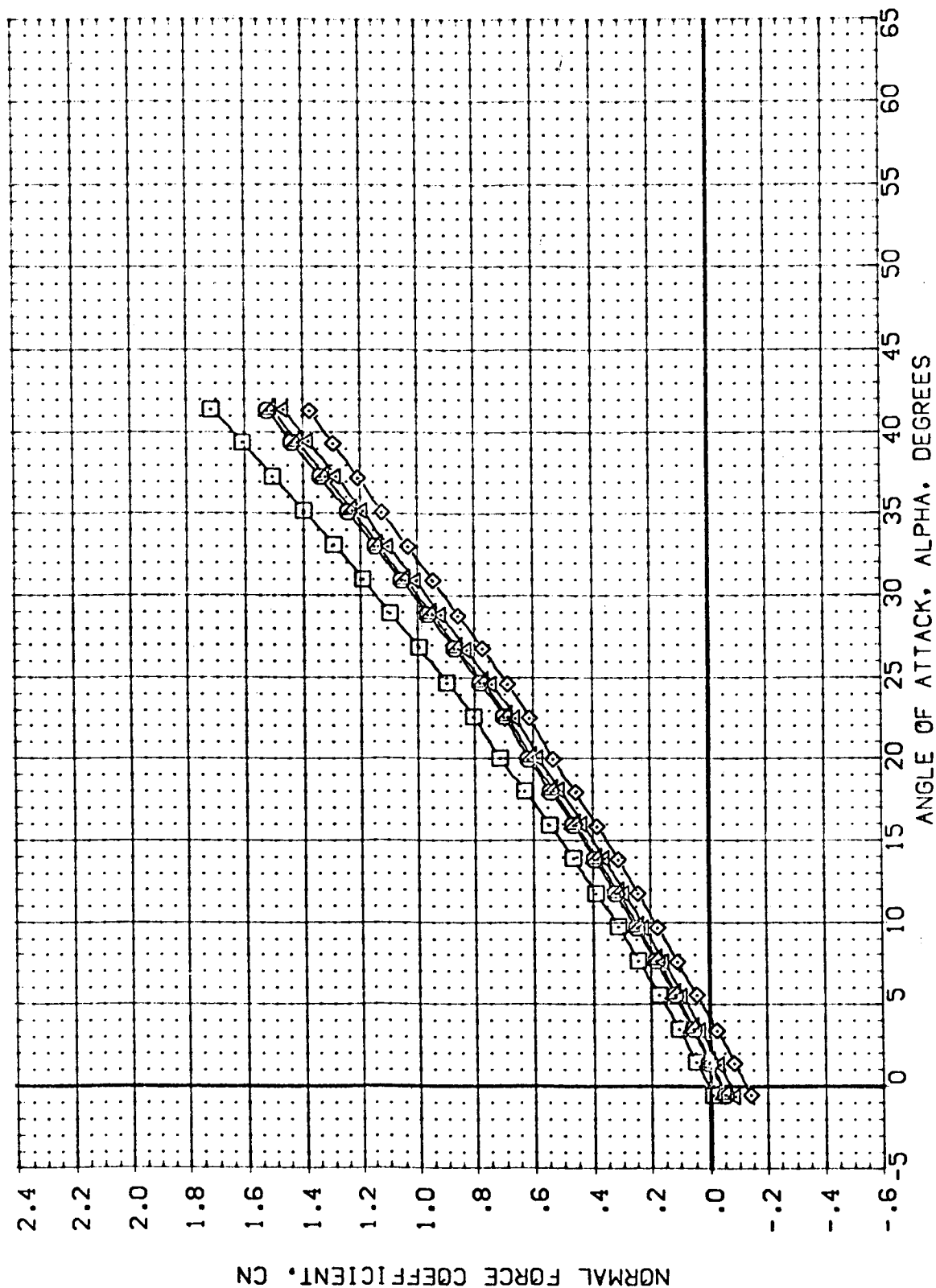


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CR3 399
 (F87C15) MSFC 574(CA48) CR3 399
 (F87C21) MSFC 574(CA48) CR3 399
 (F87C18) MSFC 574(CA48) CR3 399
 (F87C24) MSFC 574(CA48) CR3 399
 (F87S98) MSFC 574(CA48) CR3 399

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XREF 838.7000
 .000 .000 999.990 .000 YREF .0000
 .000 .000 999.990 .000 ZREF .0000
 .000 .000 999.990 .000 SCALE .0000

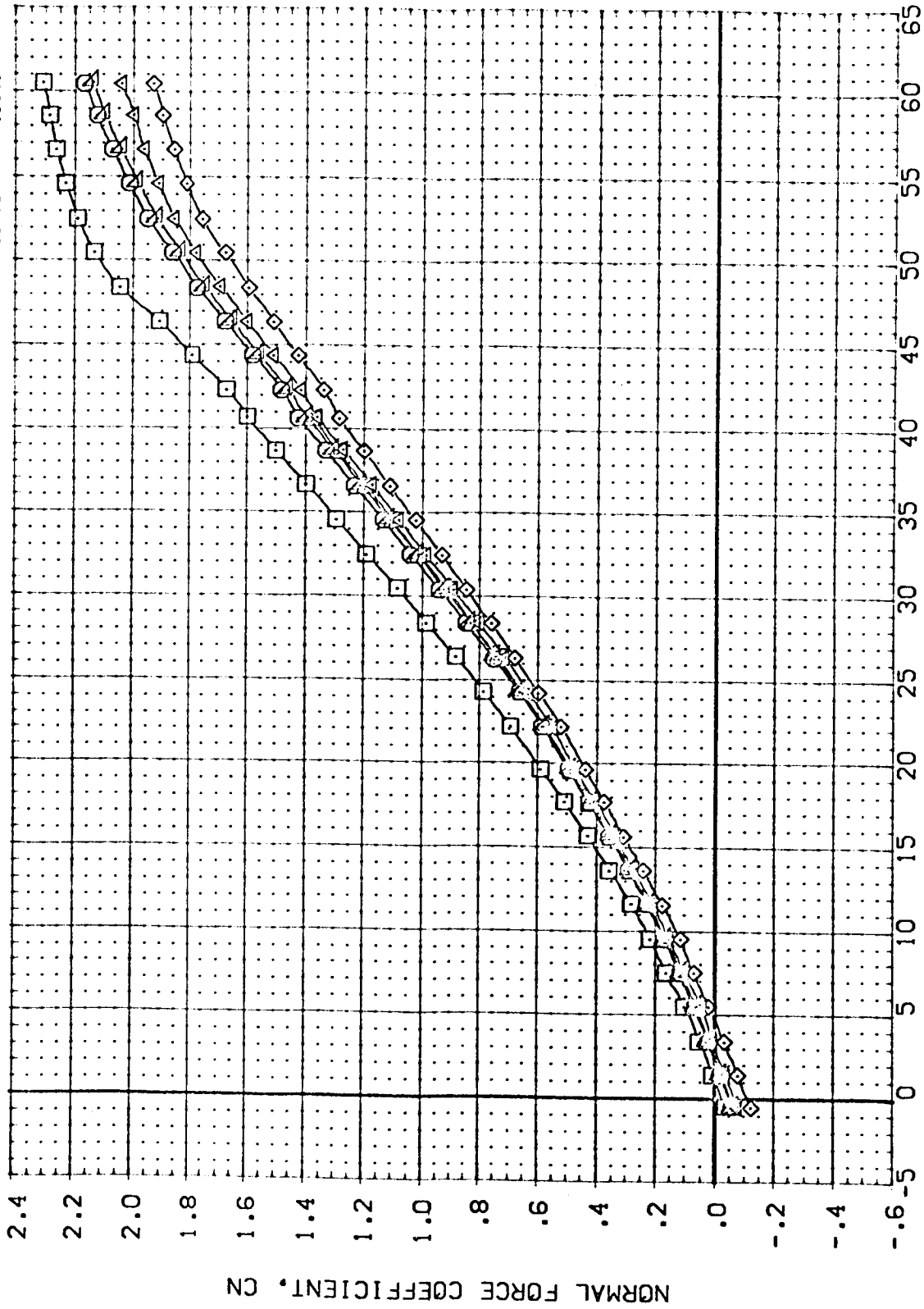
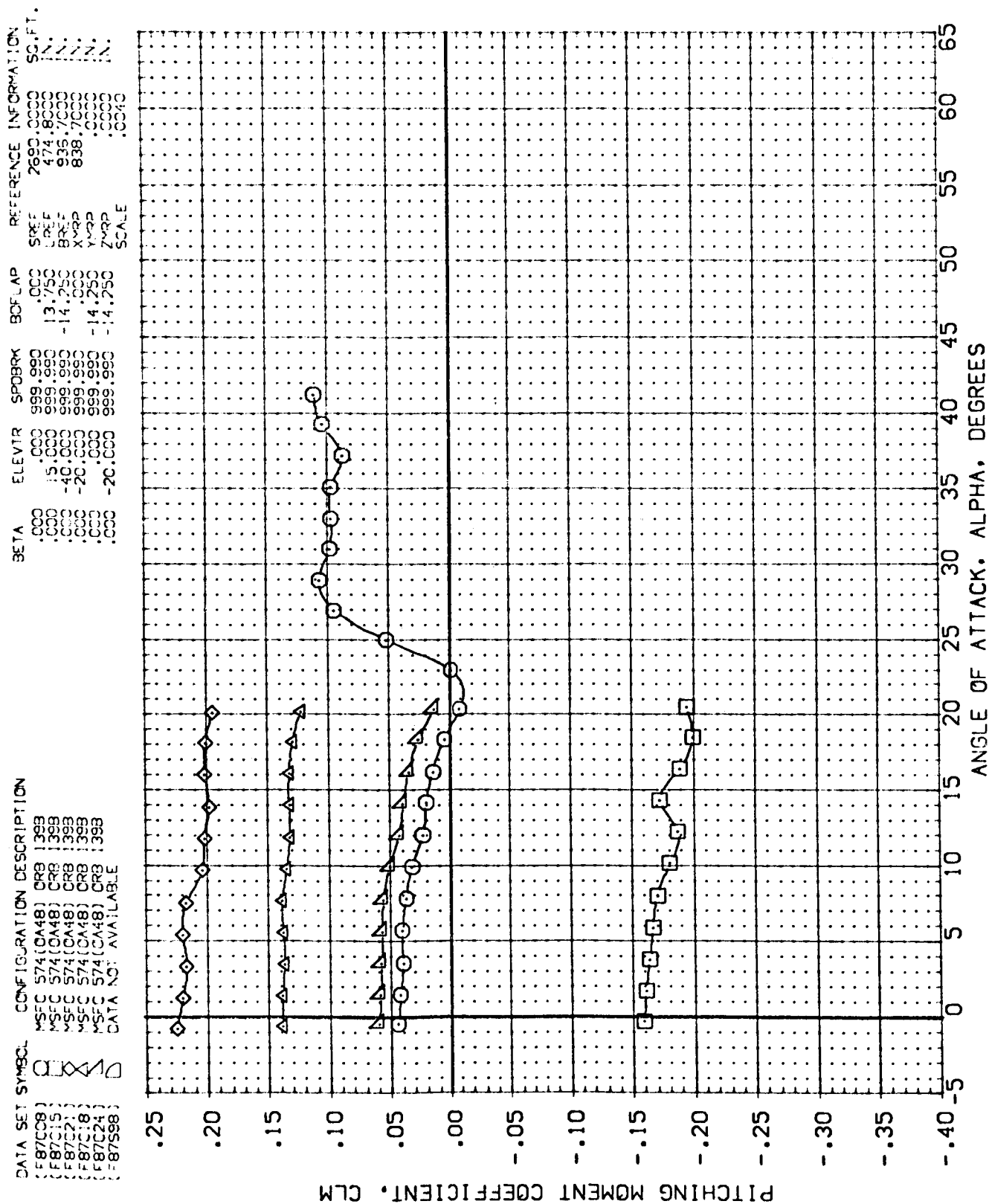


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(FOMACH = 4.96


$$[A]_{\text{MACH}} = .60$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 55.000
(F87C15)	MSFC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000 7.000
(F87C21)	MSFC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.750	BREF 936.7000 7.000
(F87C18)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000 7.000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	-14.750	YMRP .0000 7.000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.750	ZMRP .0000 7.000
						SCALE .0040

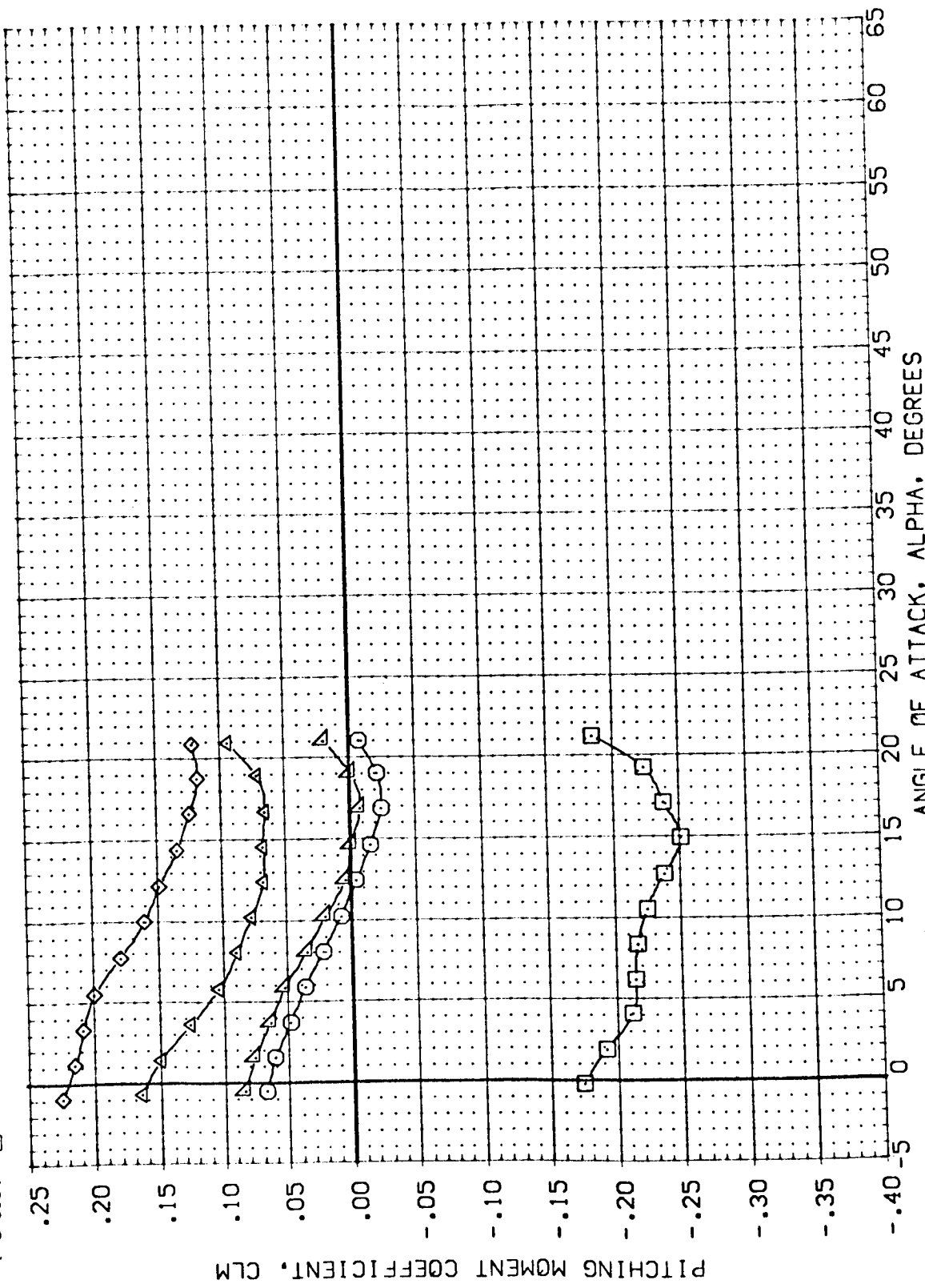


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(3)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 1393	.000	15.000	999.990	13.750	REF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1393	.000	-40.000	999.990	-14.250	BRF 935.7000
(F87C18)	MSFC 574(CA48) CRB 1393	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
						SCALE .0010

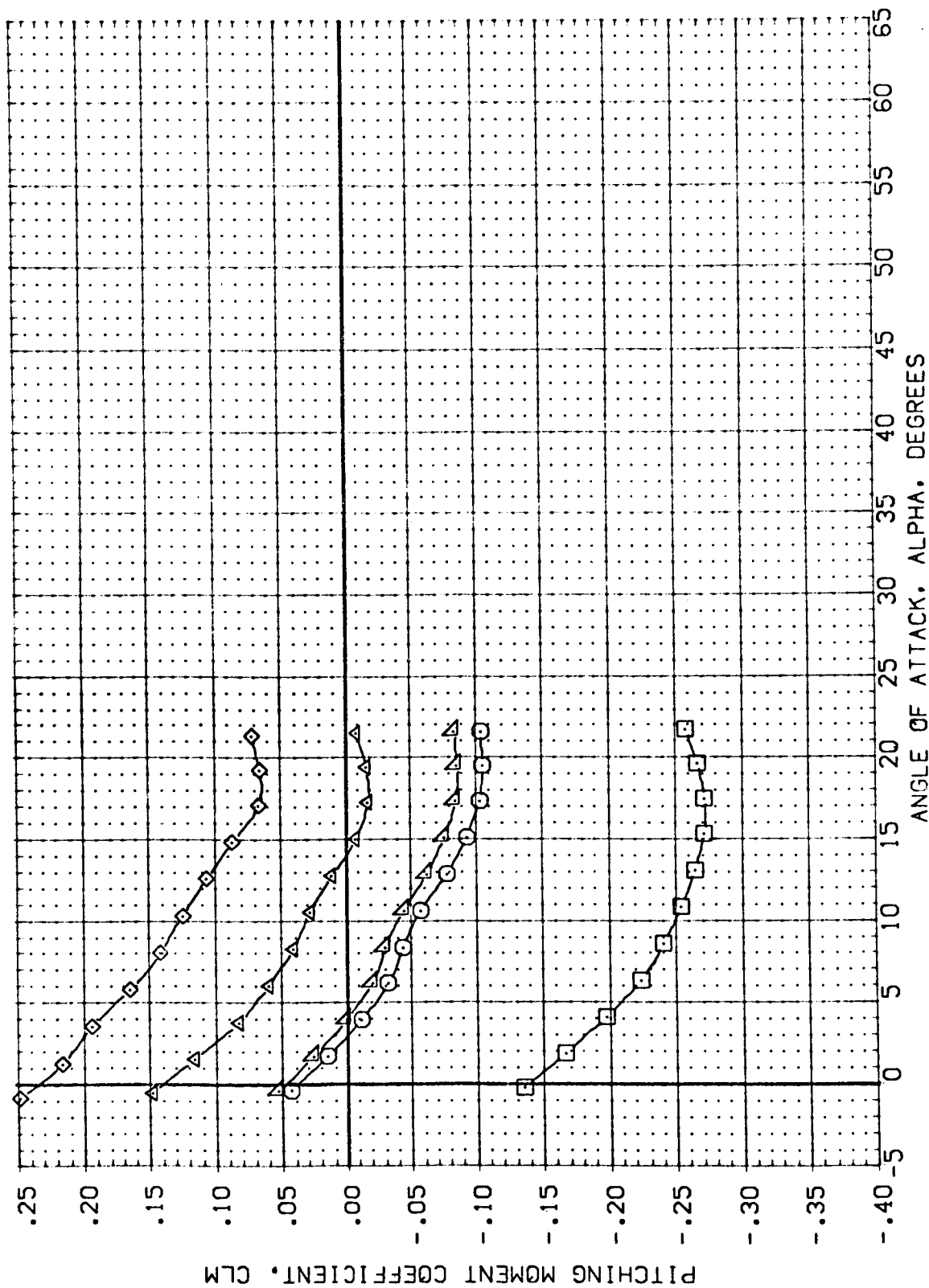


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(COMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BOCLAP REFERENCE INFORMATION SC.F.T.

MSFC 574(CA48) CRB 399 .000 .000 999.999 .000 2690.0000 2690.0000

MSFC 574(CA48) CRB 399 .000 .000 999.999 .000 474.8000 474.8000

MSFC 574(CA48) CRB 399 .000 .000 999.999 .000 936.7000 936.7000

MSFC 574(CA48) CRB 399 .000 .000 999.999 .000 838.7000 838.7000

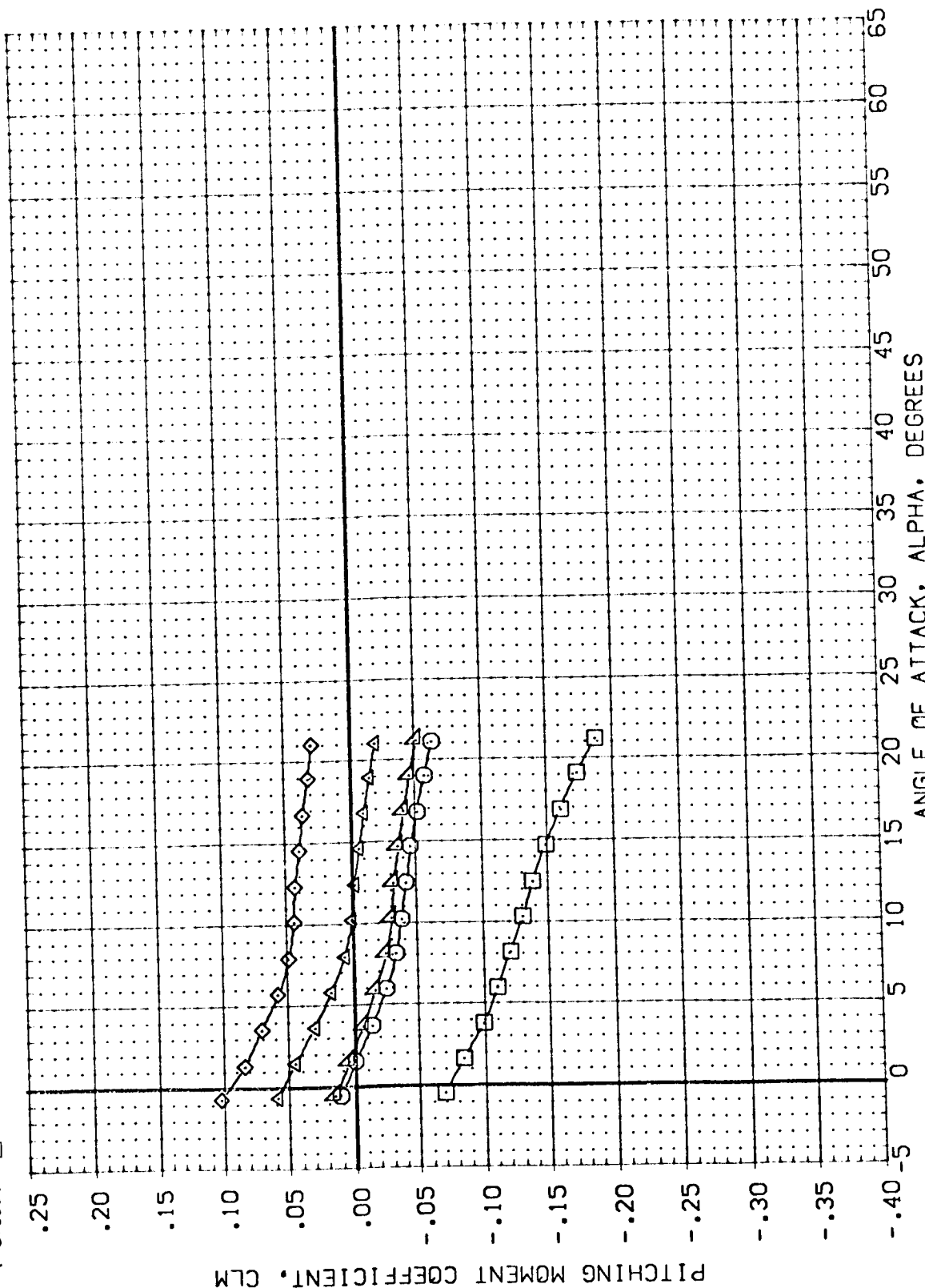


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B
MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	ZMRP .0000
(F87C98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	SCALE .0040

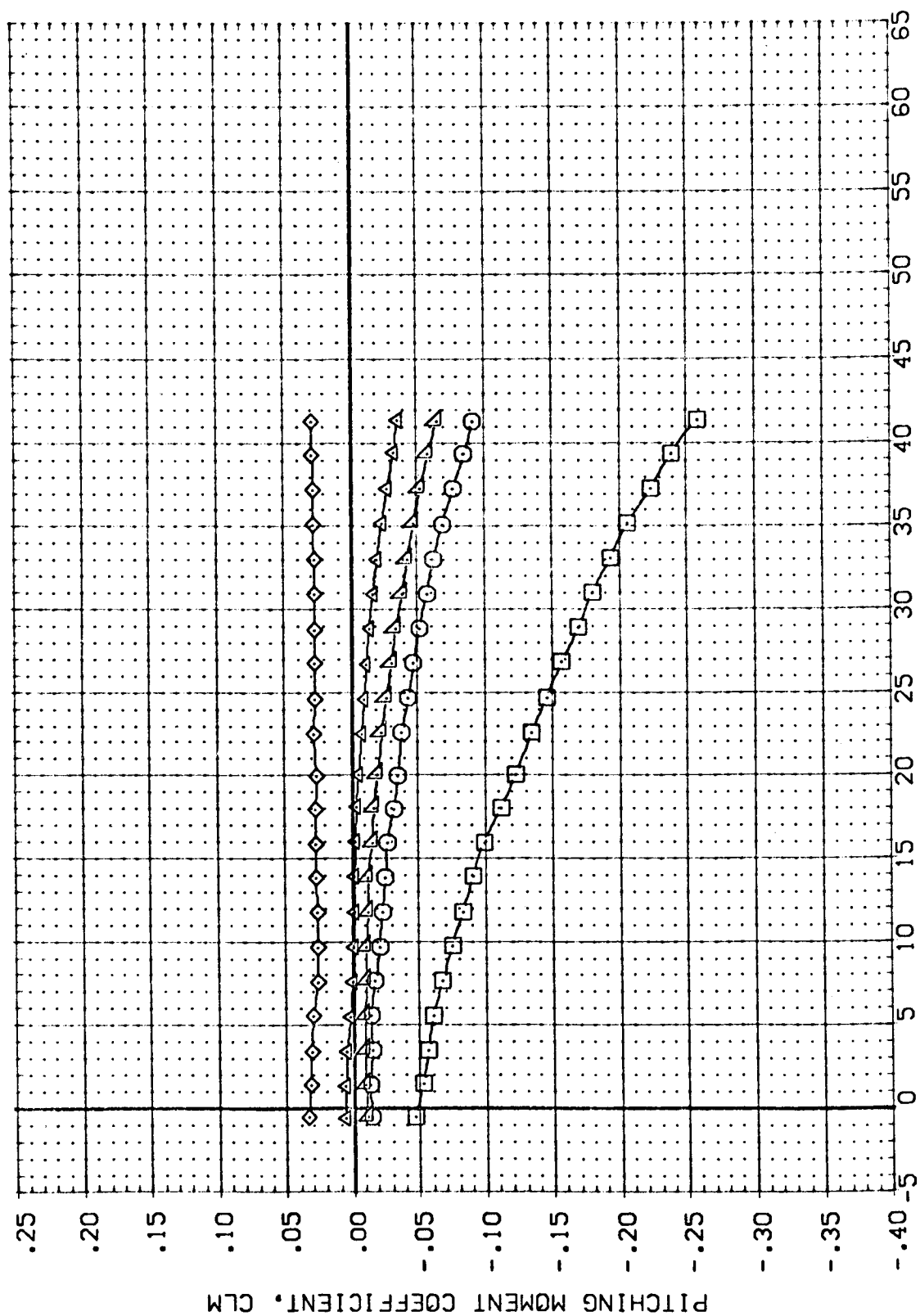


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(ED)MACH = 2.99



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOGRK	BOTLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	VMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

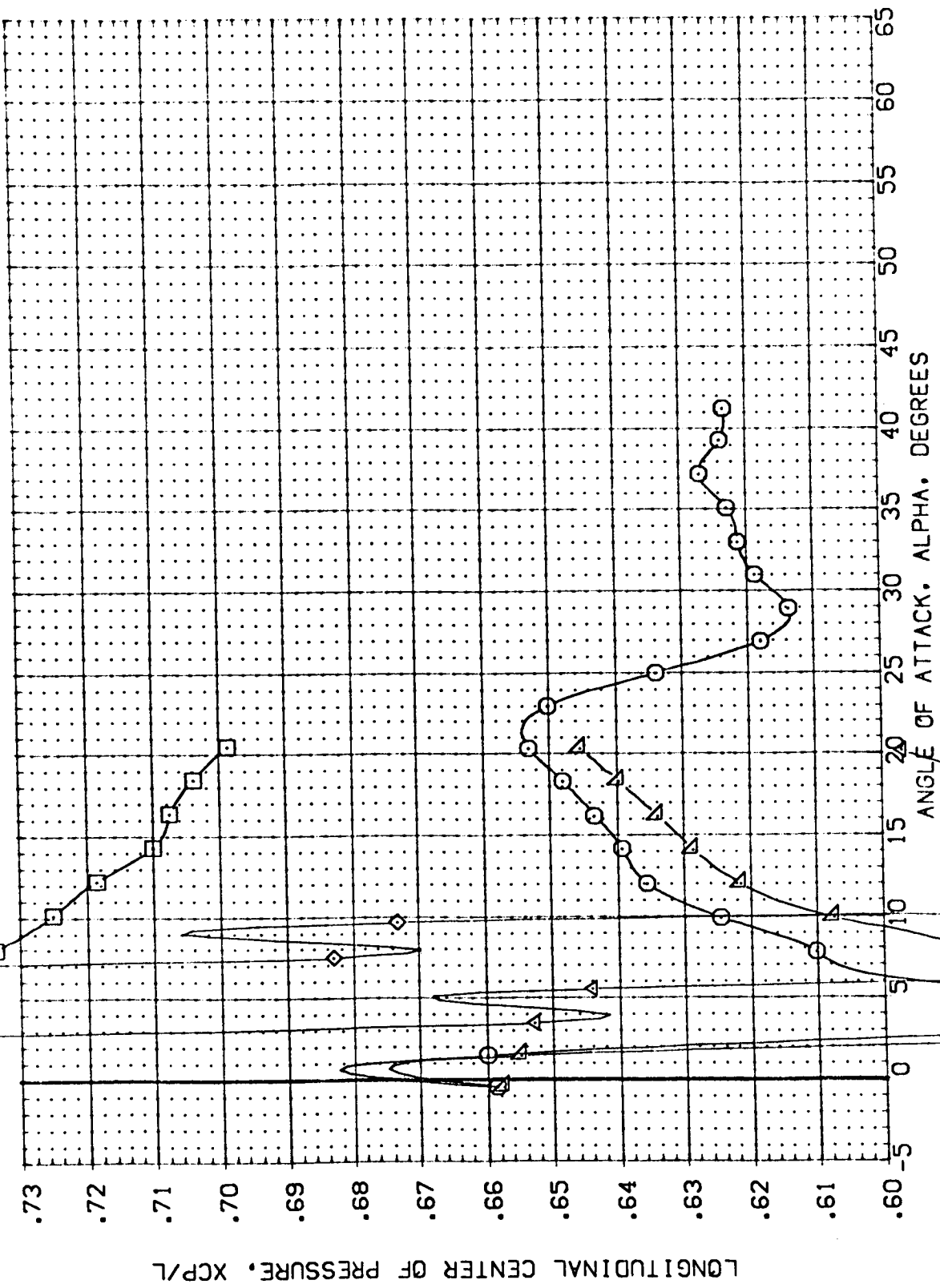


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION

(F87C08)	MSFC 574 (CA48) CRB 1399	.000	.000	999.990	.000	SPREF 2690.0000
(F87C15)	MSFC 574 (CA48) CRB 1399	.000	15.000	999.990	13.750	LRREF 474.8000
(F87C21)	MSFC 574 (CA48) CRB 1399	.000	-40.000	999.990	-14.750	SRREF 936.7000
(F87C18)	MSFC 574 (CA48) CRB 1399	.000	-20.000	999.990	.000	VMREF 838.7000
(F87C24)	MSFC 574 (CA48) CRB 1399	.000	.000	999.990	-14.750	VMREF .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.750	VMREF .0000

SCALE .0040

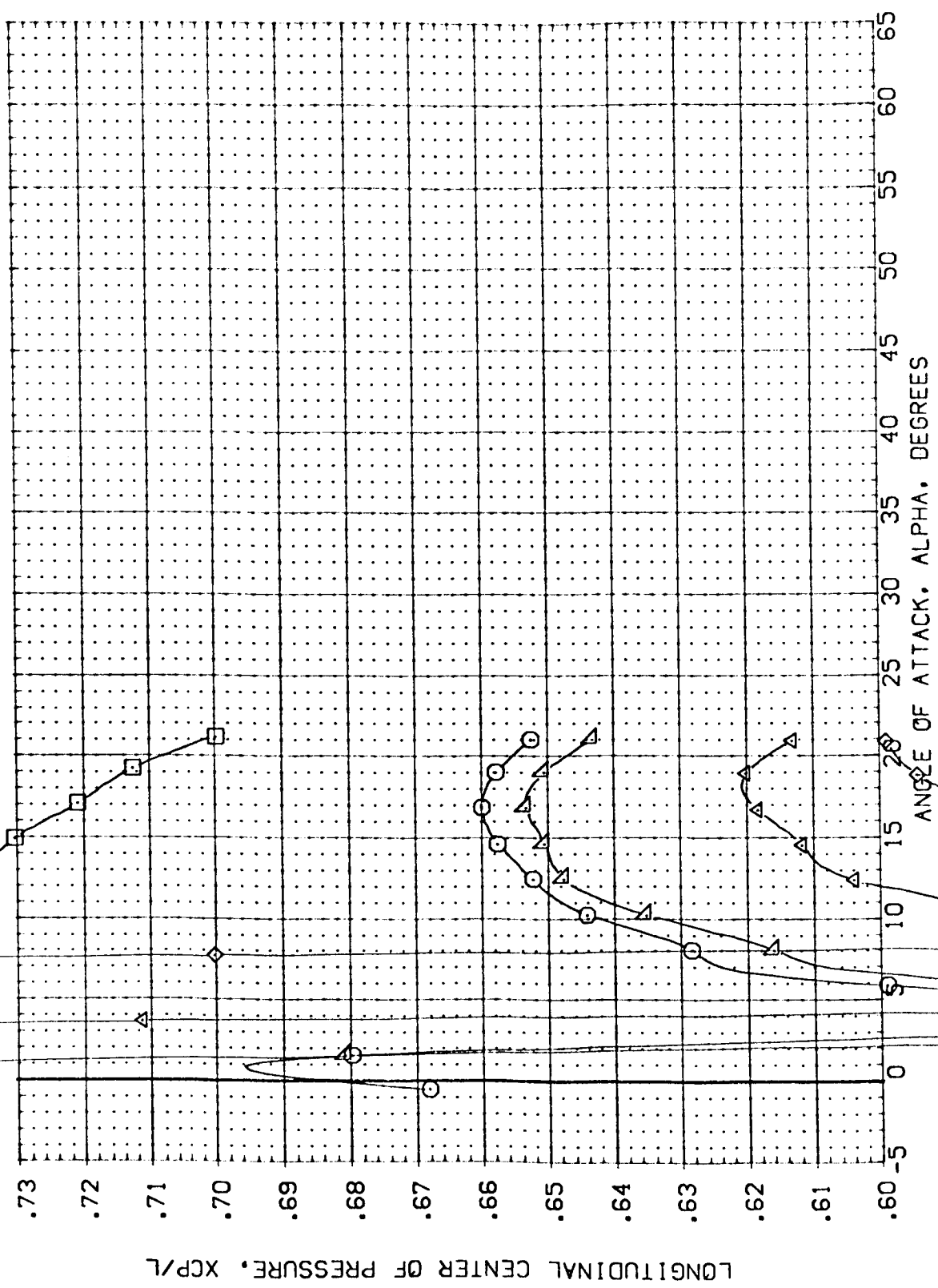


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(F87C08)	MSFC 574(CA48) CRB 139B
(F87C15)	MSFC 574(CA48) CRB 139B
(F87C21)	MSFC 574(CA48) CRB 139B
(F87C18)	MSFC 574(CA48) CRB 139B
(F87C24)	MSFC 574(CA48) CRB 139B
(F87S98)	DATA NOT AVAILABLE

BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
.000	.000	999.990	.000	LREF 474.8000
.000	15.000	999.990	13.750	BREF 936.7000
.000	-40.000	999.990	-14.250	XREF 898.7000
.000	-20.000	999.990	.000	YREF .0000
.000	-20.000	999.990	-14.250	ZREF .0000
.000	-20.000	999.990	-14.250	SCALE .0010

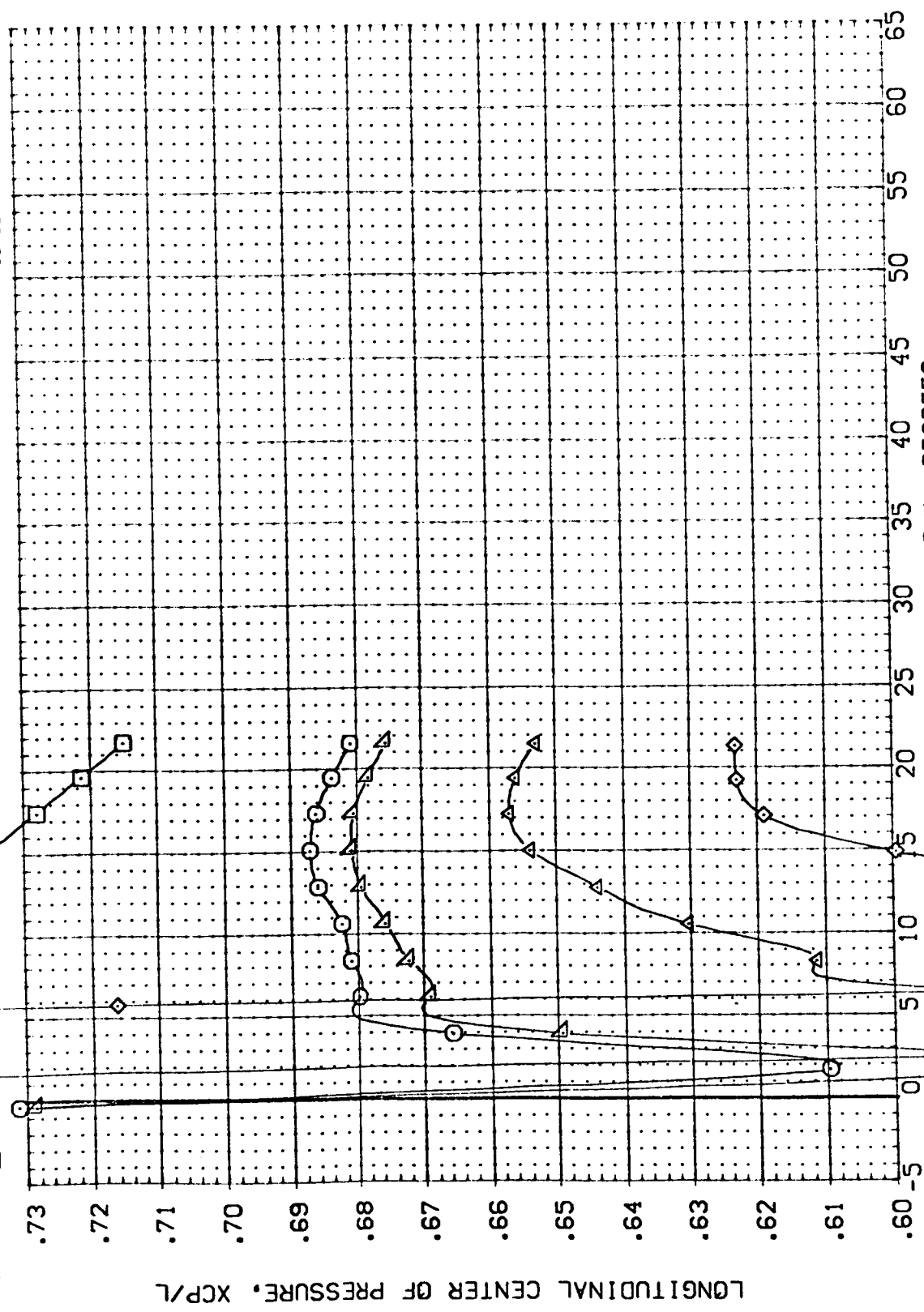
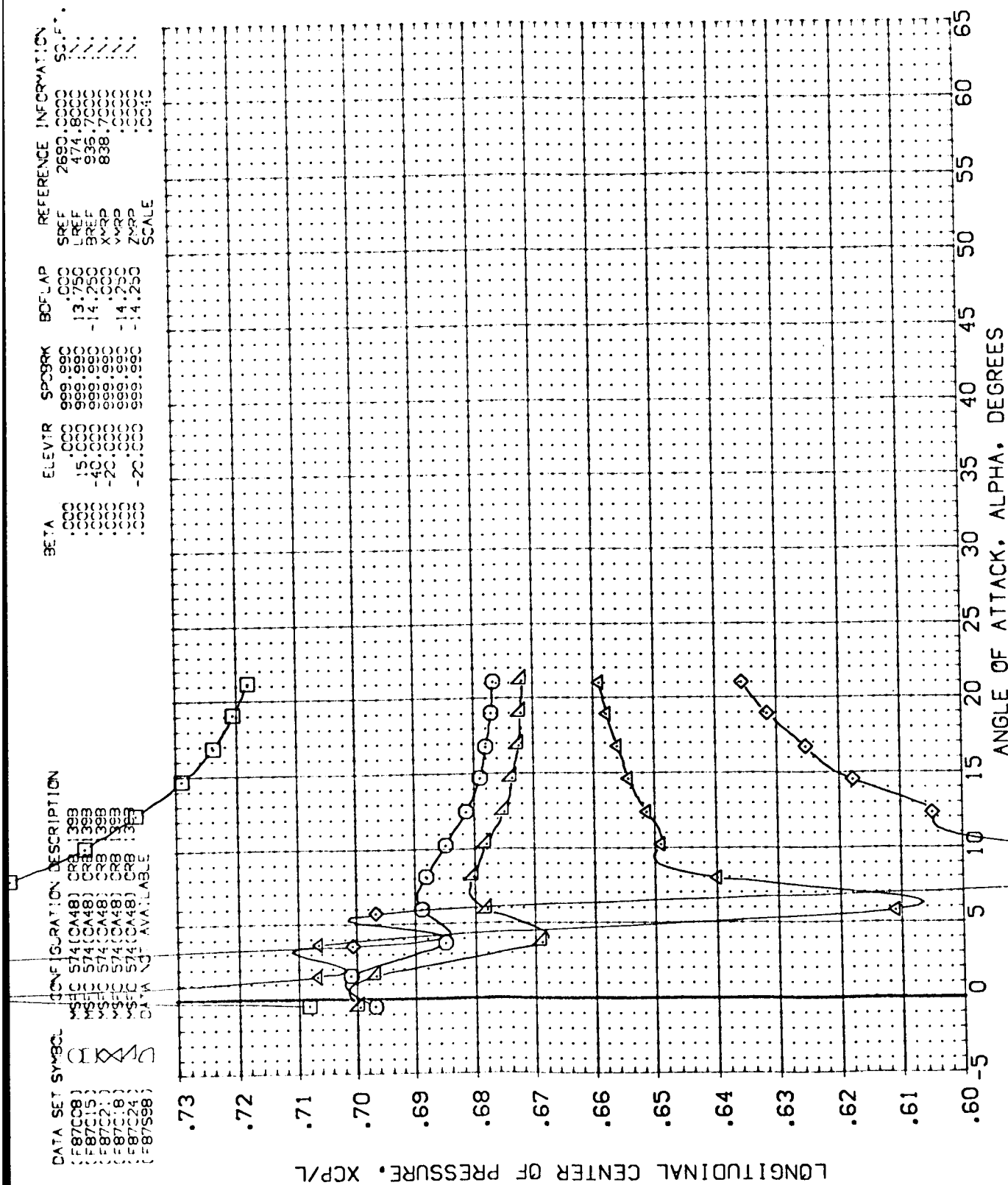


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B



PAGE 0000

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	ELEVATOR	SPCGRY	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSEC 574(CA48)	CRB 393	.000	.000	999.990	.000	SRCE 2690.0000
(F87C15)	MSEC 574(CA48)	CRB 393	.000	15.000	999.990	.000	LREF 474.8000
(F87C21)	MSEC 574(CA48)	CRB 393	.000	-40.000	999.990	-14.250	BRFF 936.7000
(F87C18)	MSEC 574(CA48)	CRB 393	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSEC 574(CA48)	CRB 393	.000	-20.000	999.990	-14.250	VMRP .0000
(F87S98)	MSEC 574(CA48)	CRB 393	.000	-20.000	999.990	-14.250	ZMRP .0000
DATA NOT AVAILABLE							SCALE .0010

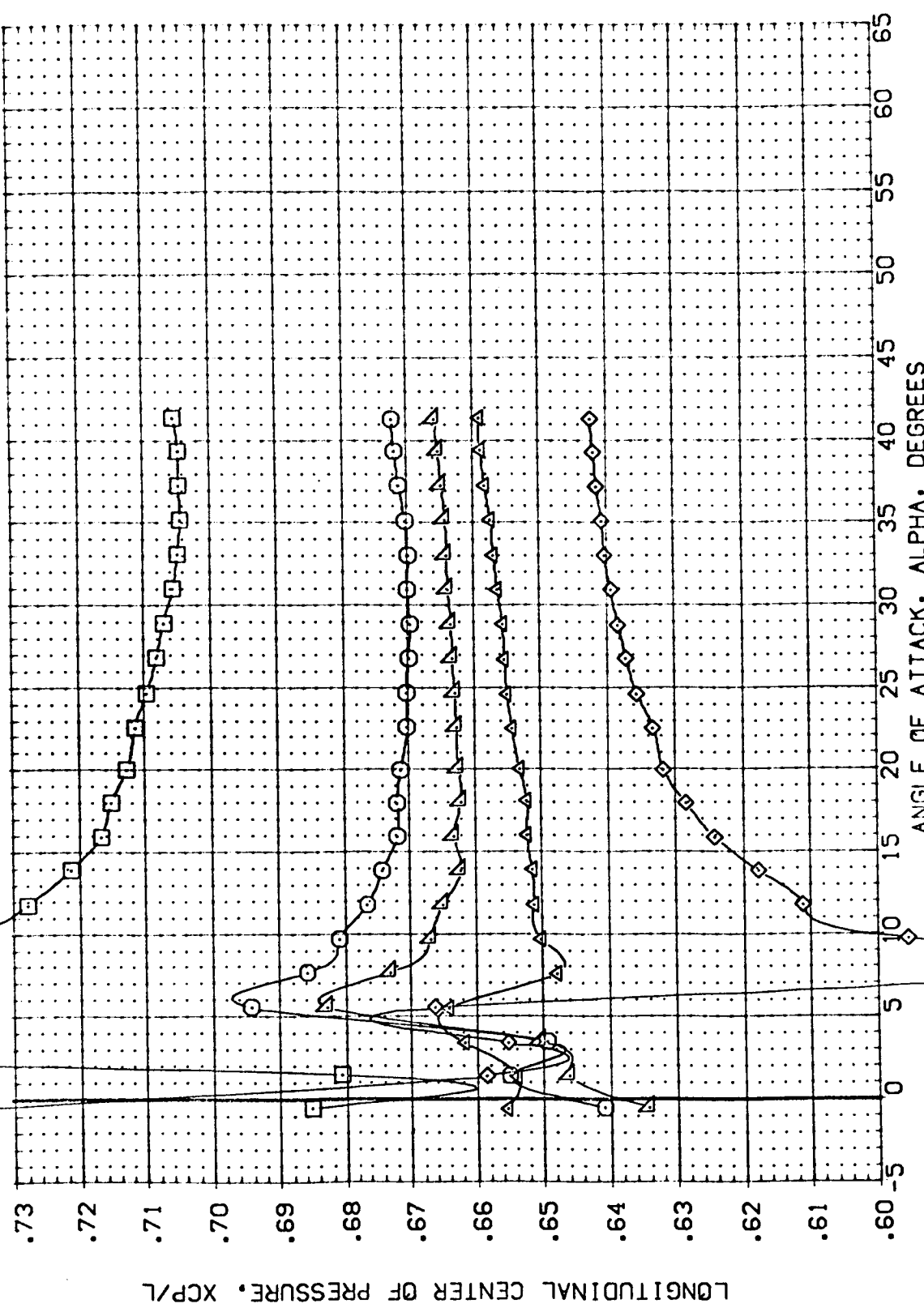


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVIR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574 (CA48) CR3 393	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87C15)	MSFC 574 (CA48) CR3 393	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574 (CA48) CR3 393	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574 (CA48) CR3 393	.000	.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574 (CA48) CR3 393	.000	.000	999.990	-14.250	ZMRP .0000
(F87598)	MSFC 574 (CA48) CR3 393	.000	-20.000	999.990	-14.250	SCALE .0000

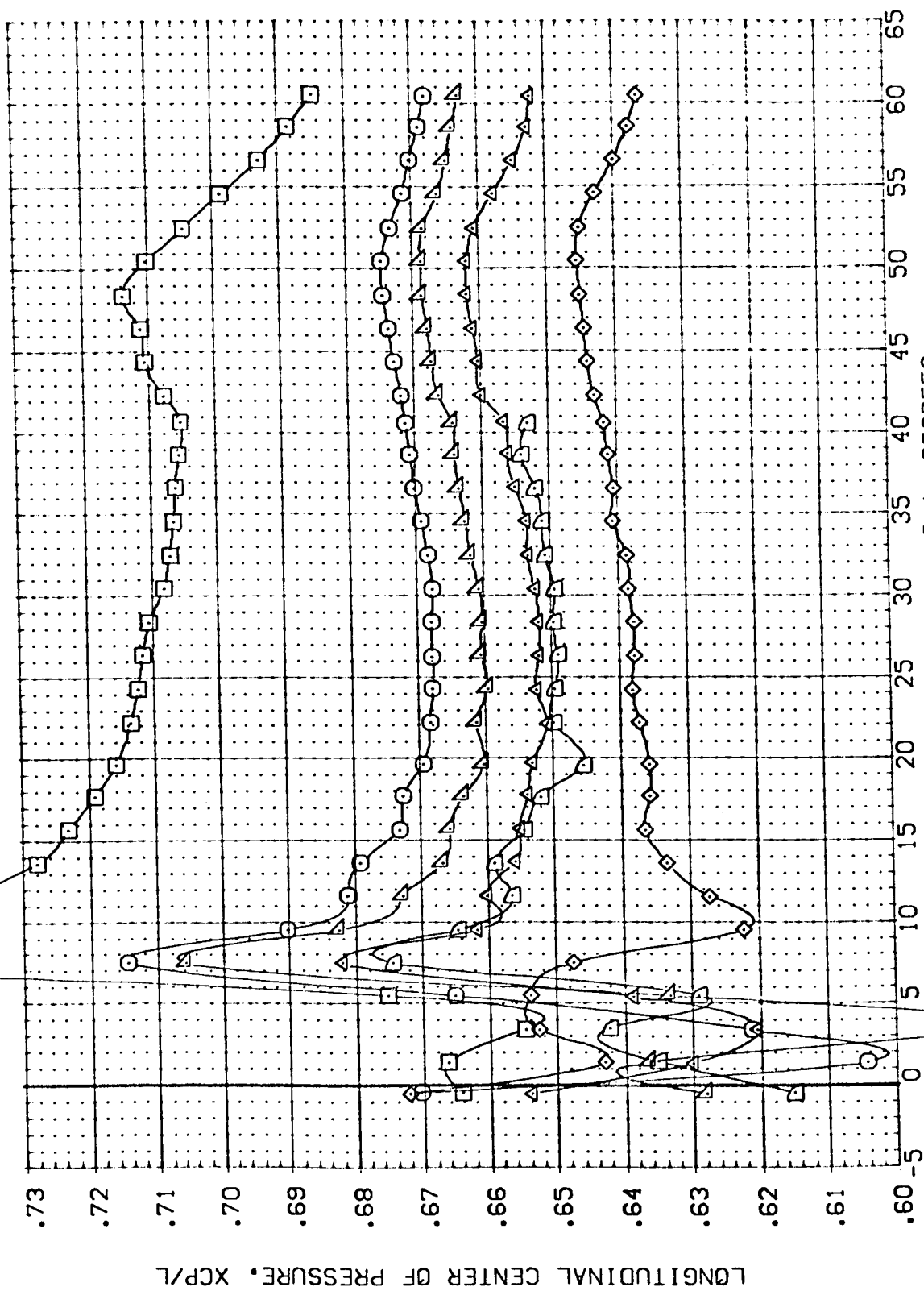


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LRREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BRREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.0000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

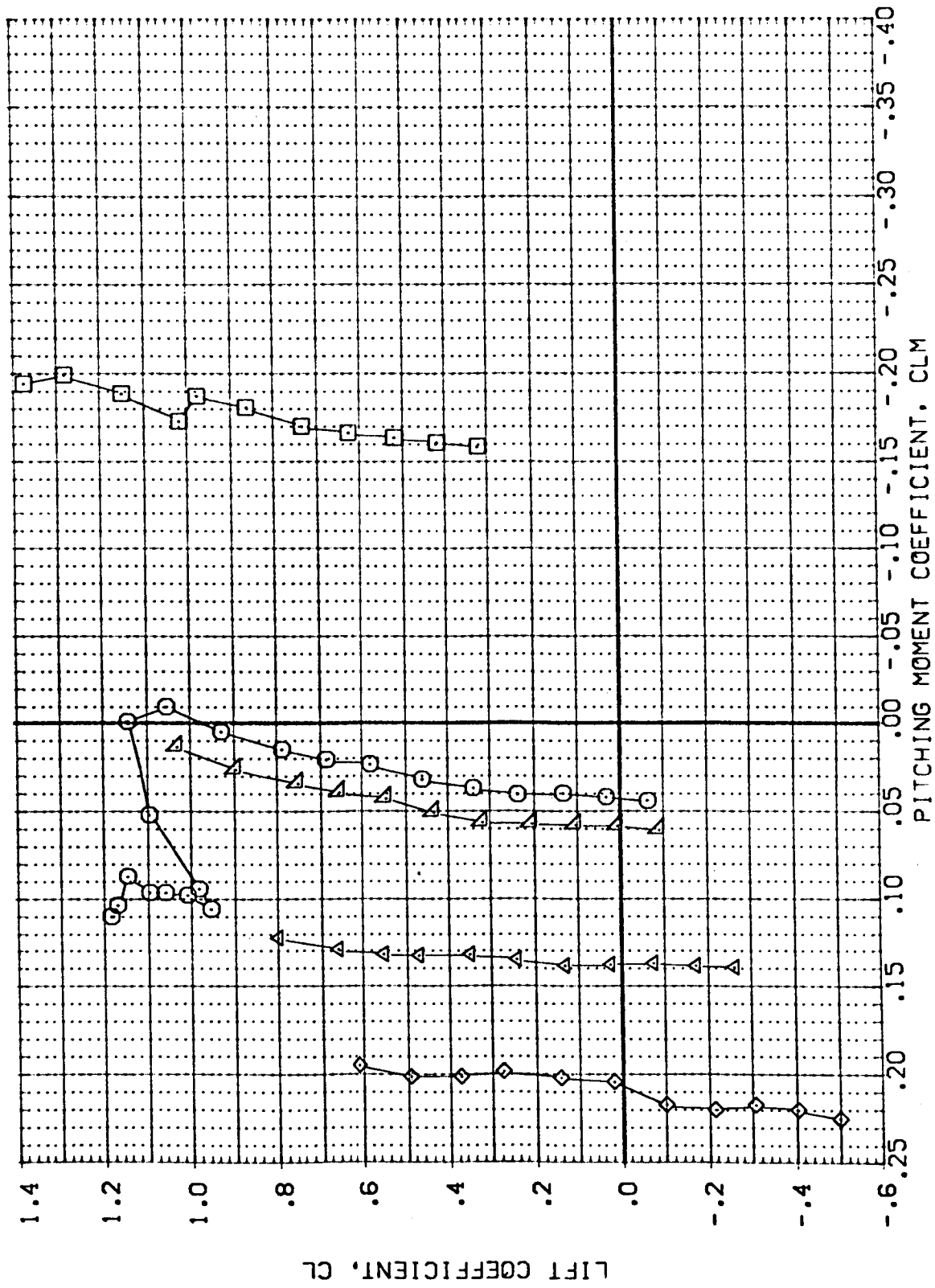


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(F87C08)	MSFC 574 (CA48)	CRB 1398
(F87C15)	MSFC 574 (CA48)	CRB 1393
(F87C21)	MSFC 574 (CA48)	CRB 1393
(F87C18)	MSFC 574 (CA48)	CRB 1393
(F87C24)	MSFC 574 (CA48)	CRB 1393
(F87C98)	DATA NOT AVAILABLE	

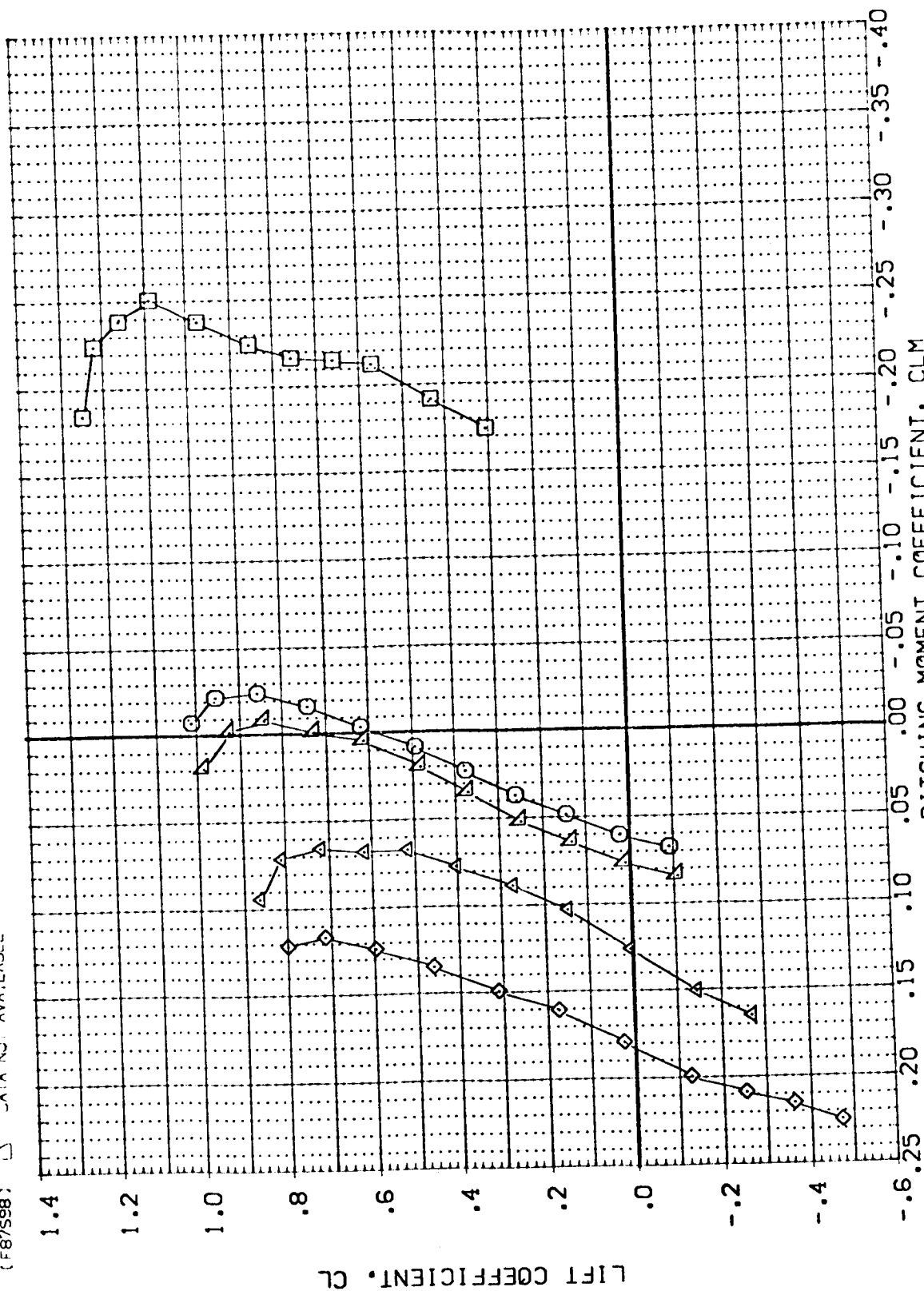


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(3) MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08) MSFC 574(CA48) CRB 1398

(F87C15) MSFC 574(CA48) CRB 1398

(F87C21) MSFC 574(CA48) CRB 1398

(F87C18) MSFC 574(CA48) CRB 1398

(F87C24) MSFC 574(CA48) CRB 1398

(F87598) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SC.FT.

.000 15.000 999.990 13.750 LREF 474.8000 " "

.000 -40.000 999.990 -14.250 BREF 936.7000 " "

.000 -20.000 999.990 .000 XMRP 838.7000 " "

.000 .000 999.990 -14.250 YMRP .0000 " "

.000 -20.000 999.990 -14.250 ZMRP .0000 " "

SCALE .0040

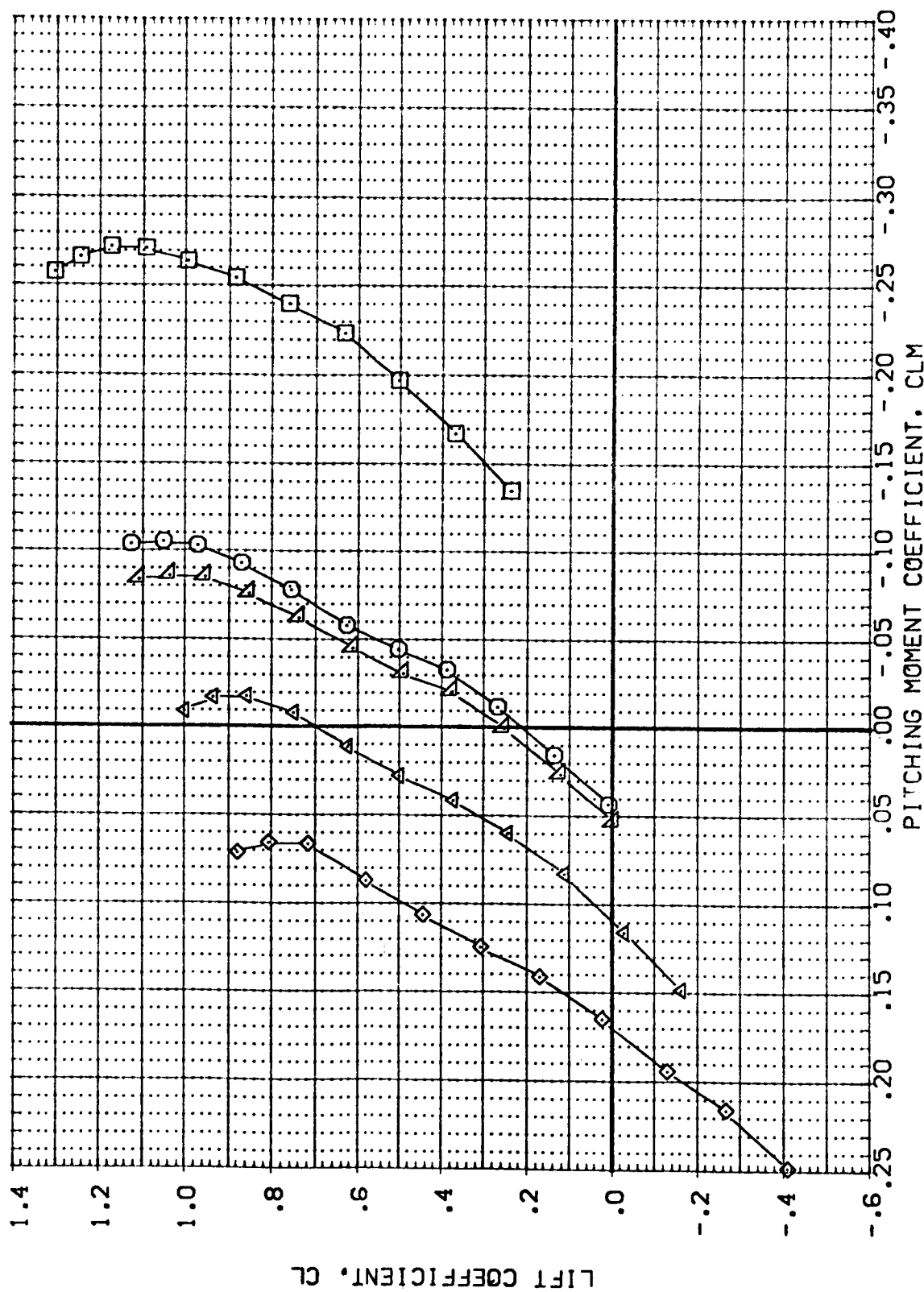


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) ORB 1398	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87C21)	MSFC 574(CA48) ORB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87C18)	MSFC 574(CA48) ORB 1398	.000	-20.000	999.990	.000	XMRP 838.7000 N.
(F87C24)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	-14.250	ZMRP .0000 N.
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	SCALE .0040

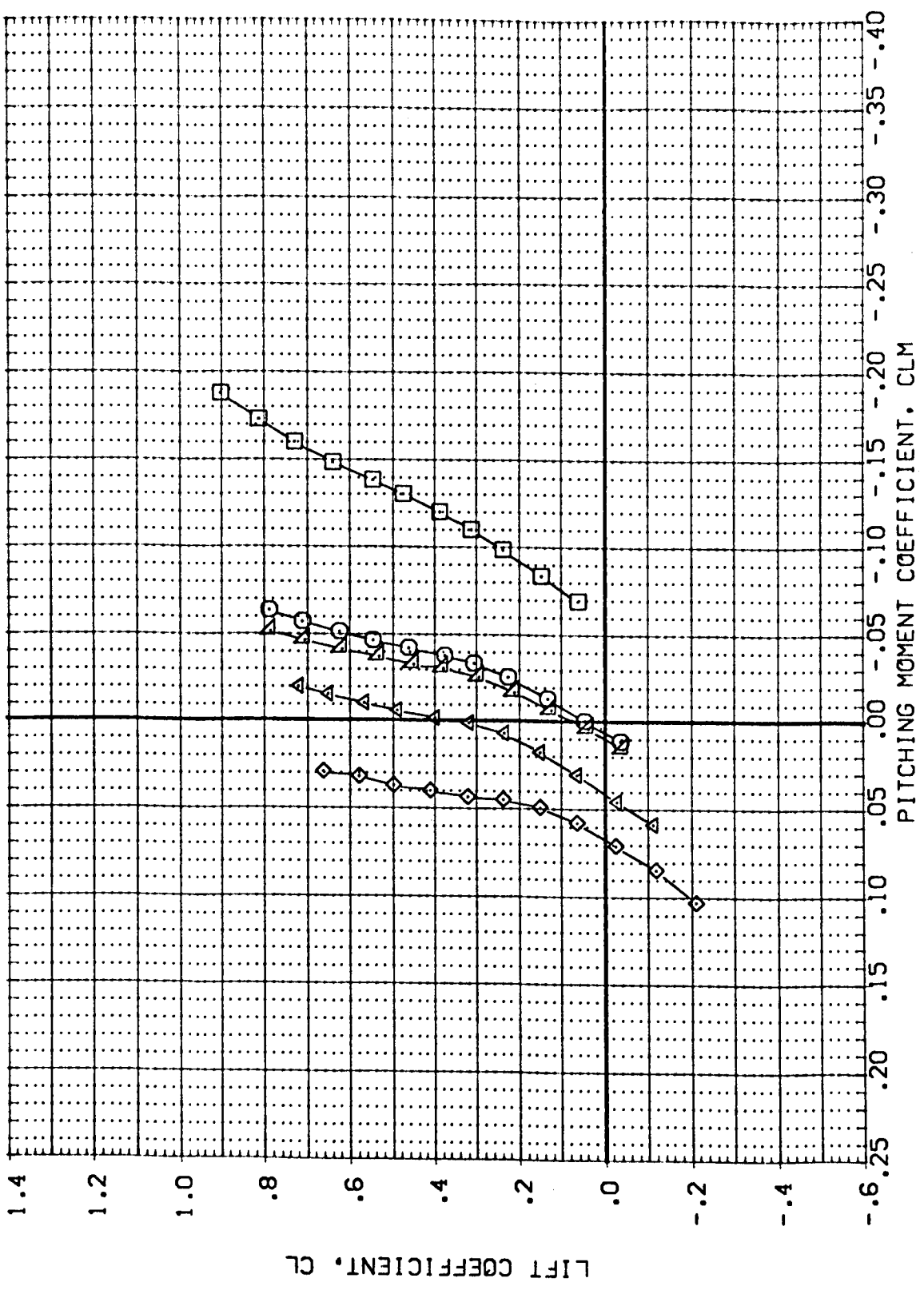


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(D)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(QA48) CRB 139B
 (F87C15) MSFC 574(QA48) CRB 139B
 (F87C21) MSFC 574(QA48) CRB 139B
 (F87C18) MSFC 574(QA48) CRB 139B
 (F87C24) MSFC 574(QA48) CRB 139B
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 N.
 .000 -40.000 999.990 -14.250 BREF 936.7000 N.
 .000 -20.000 999.990 .000 XMRP 838.7000 N.
 .000 .000 999.990 -14.250 YMRP .0000 N.
 .000 -70.000 999.990 -14.250 ZMRP .0000 N.
 SCALE .0010

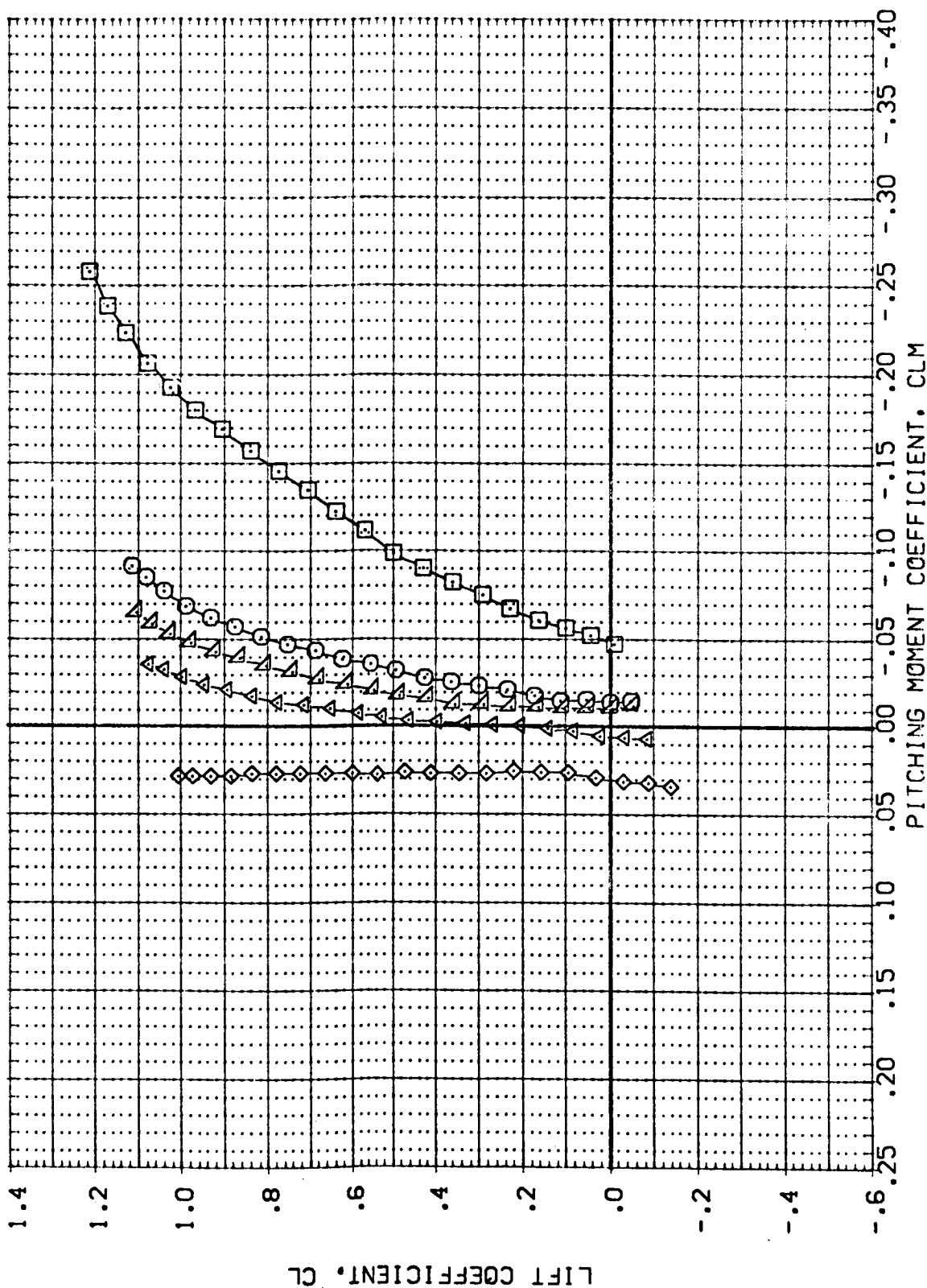


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CR3	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CR3	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CR3	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CR3	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CR3	.000	.000	999.990	-14.250	YMRP .0000
(F87S68)	MSFC 574(CA48) CR3	.000	-20.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

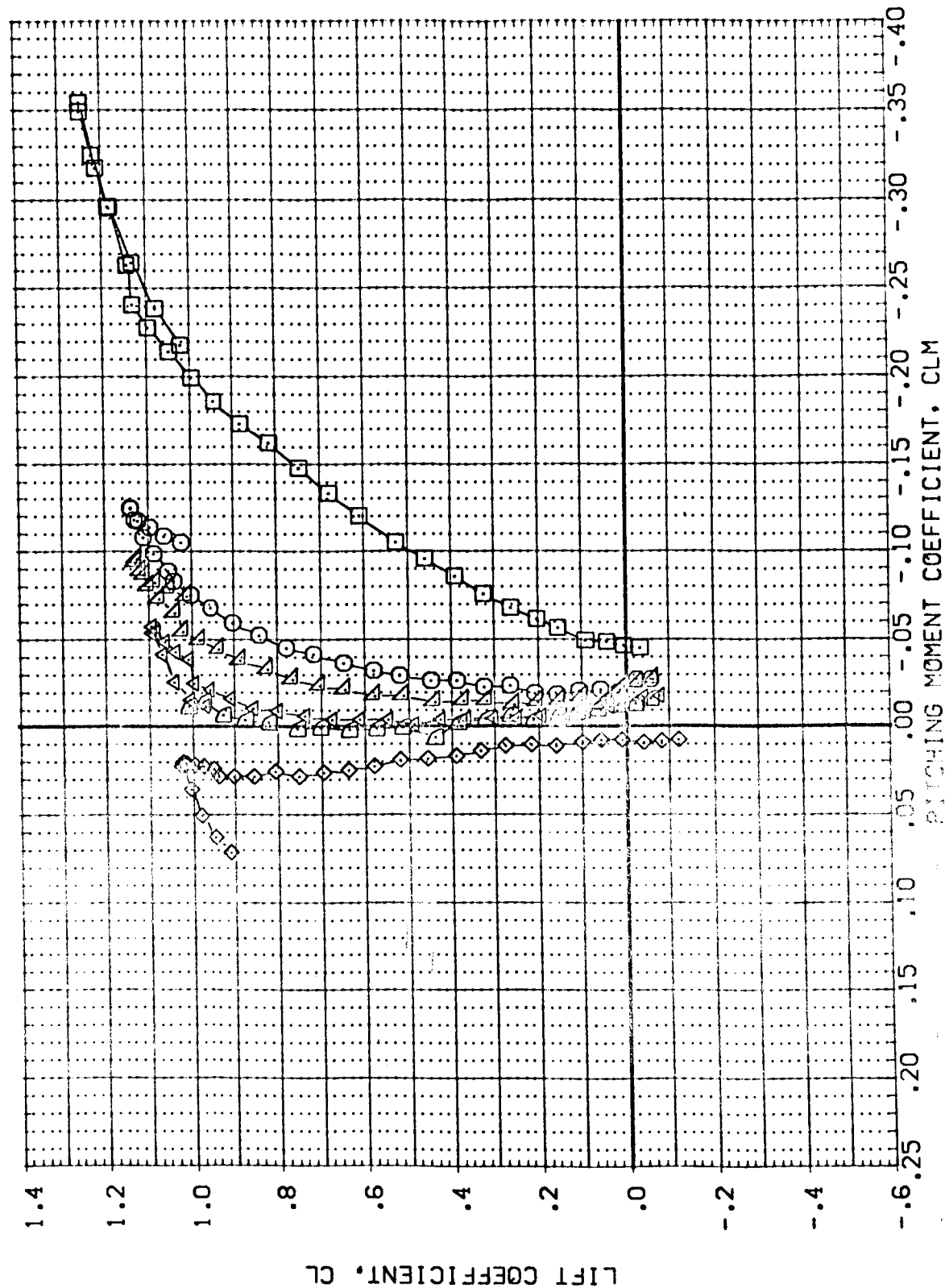


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSEC 574(CA48) CRB 399	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSEC 574(CA48) CRB 399	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSEC 574(CA48) CRB 399	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSEC 574(CA48) CRB 399	.000	-20.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	SCALE

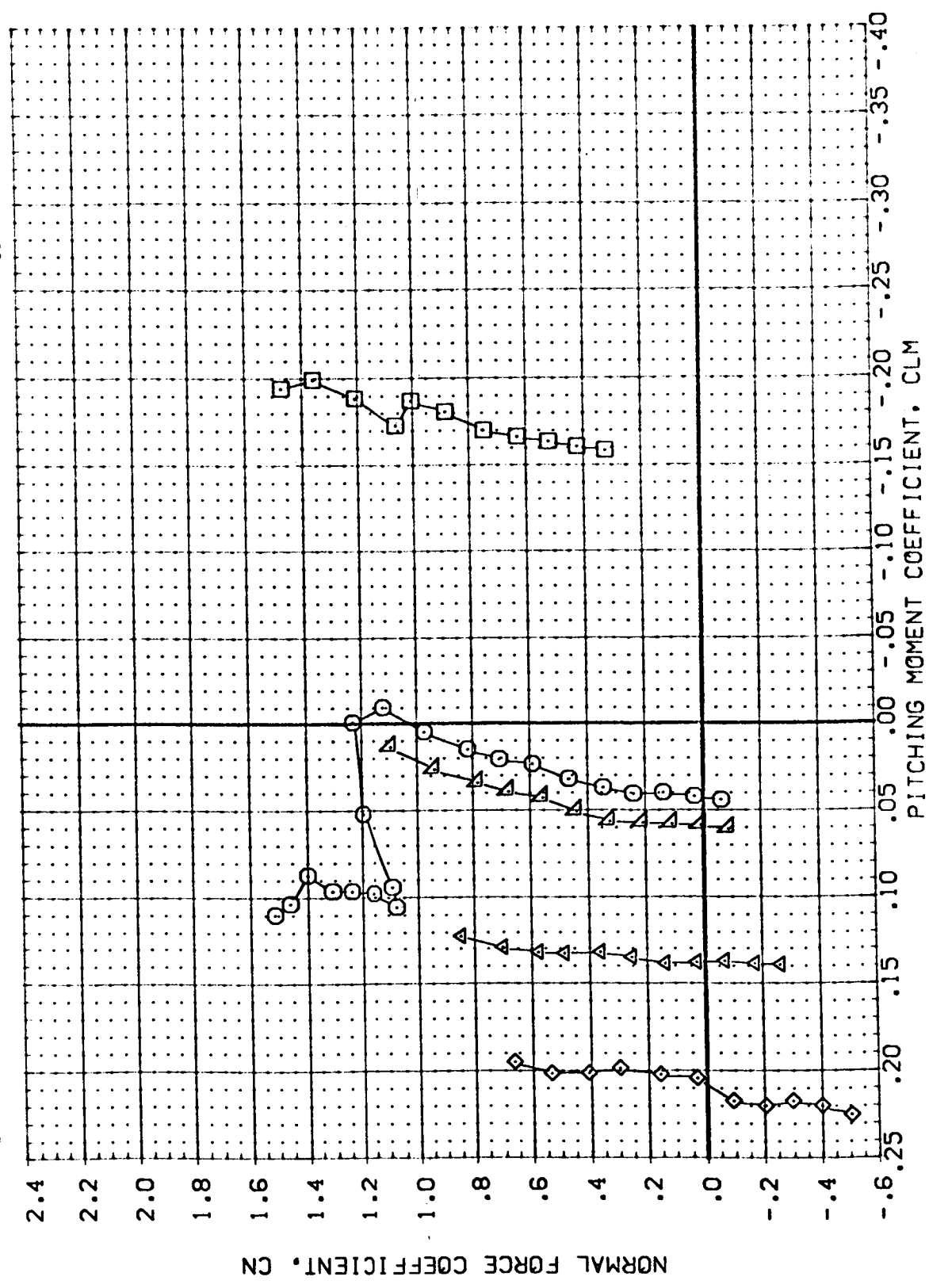


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SG. FT.
(F87C08)	MSFC 574(CA48) CR3 393	.000	.000	999.990	.000	SREF	2690.0000
(F87C15)	MSFC 574(CA48) CR3 393	.000	15.000	999.990	13.750	REF	474.8000
(F87C21)	MSFC 574(CA48) CR3 393	.000	-40.000	999.990	-14.250	REF	936.7000
(F87C18)	MSFC 574(CA48) CR3 393	.000	-20.000	999.990	.000	XVRP	838.0000
(F87C24)	MSFC 574(CA48) CR3 393	.000	-20.000	999.990	-14.250	YVRP	.0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVRP	.0000
					SCALE		.0000

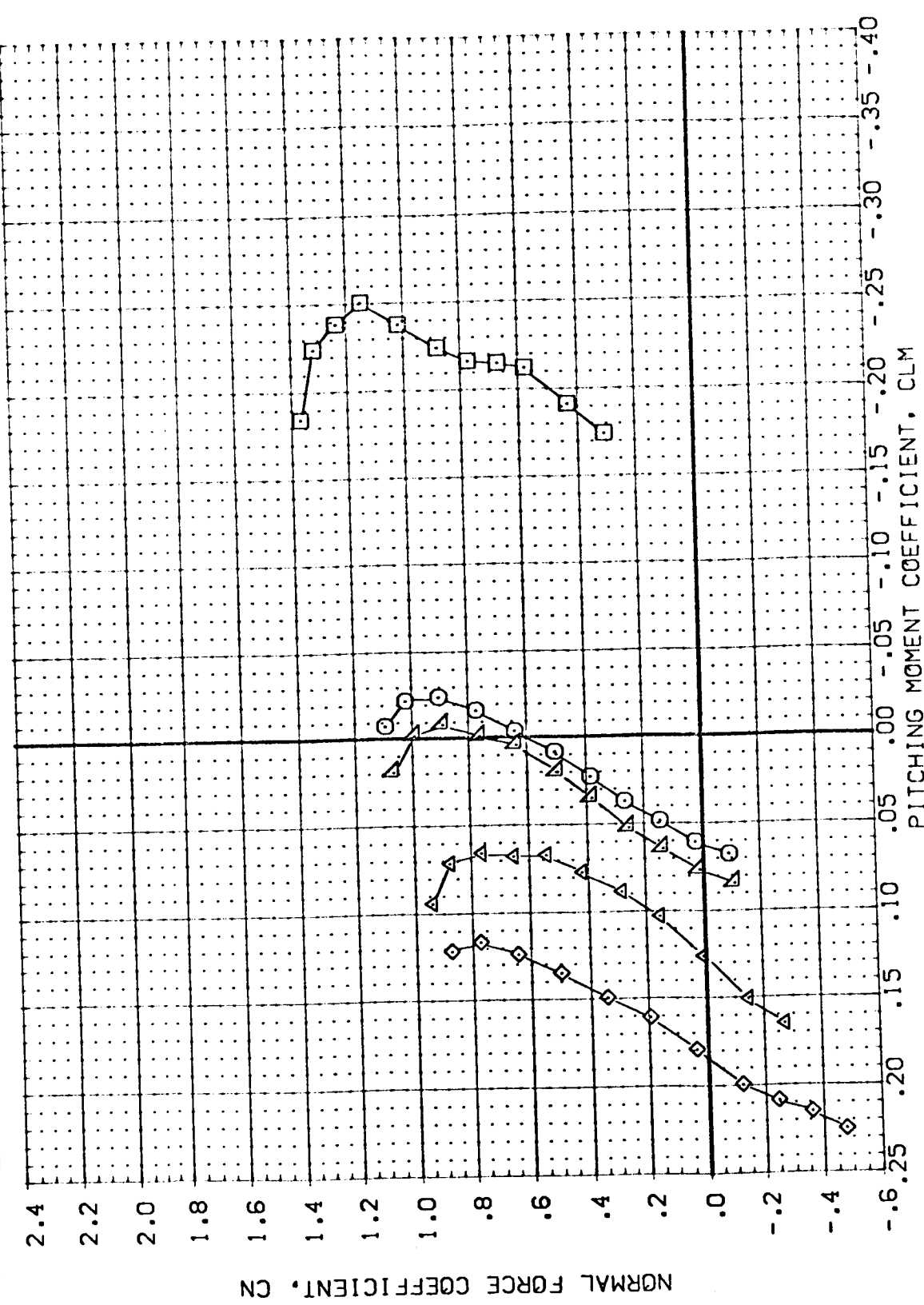


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(3)MACH = .89

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)		MSFC 574(OA48) CRB 139B	.000	.000	999.990	.000	SREF 7990.0000
(F87C15)		MSFC 574(OA48) CRB 139B	.000	15.000	999.990	13.750	REF 474.8000
(F87C21)		MSFC 574(OA48) CRB 139B	.000	-40.000	999.990	-14.250	SREF 936.7000
(F87C28)		MSFC 574(OA48) CRB 139B	.000	-20.000	999.990	-14.250	REF 838.7000
(F87C24)		MSFC 574(OA48) CRB 139B	.000	.000	999.990	-14.250	REF 838.7000
(F87S98)		DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	REF 838.7000

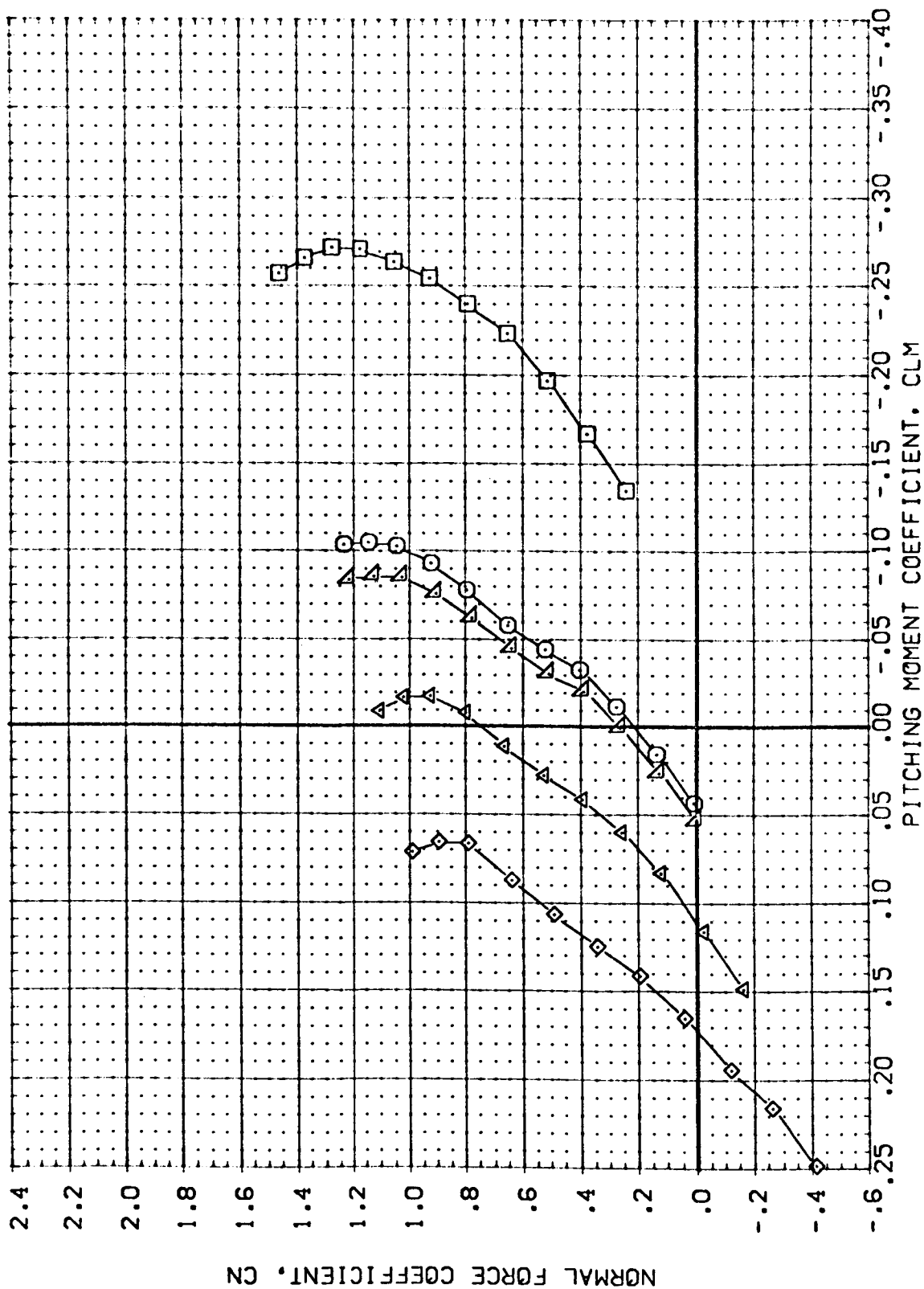


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CR3 1398
 (F87C15) MSFC 574(CA48) CR3 1398
 (F87C21) MSFC 574(CA48) CR3 1398
 (F87C18) MSFC 574(CA48) CR3 1398
 (F87C24) MSFC 574(CA48) CR3 1398
 (F87C98) DATA NOT AVAILABLE

BETA ELEV'R SPDBRK BOELAP
 .000 .000 999.999 .000
 .000 15.000 999.999 .000
 .000 -40.000 999.999 .000
 .000 -20.000 999.999 .000
 .000 -20.000 999.999 .000
 .000 -20.000 999.999 .000

REFERENCE INFORMATION
 SREF 2893.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XREF 838.7000
 YREF .0000
 ZREF .0000
 SCALE .0040

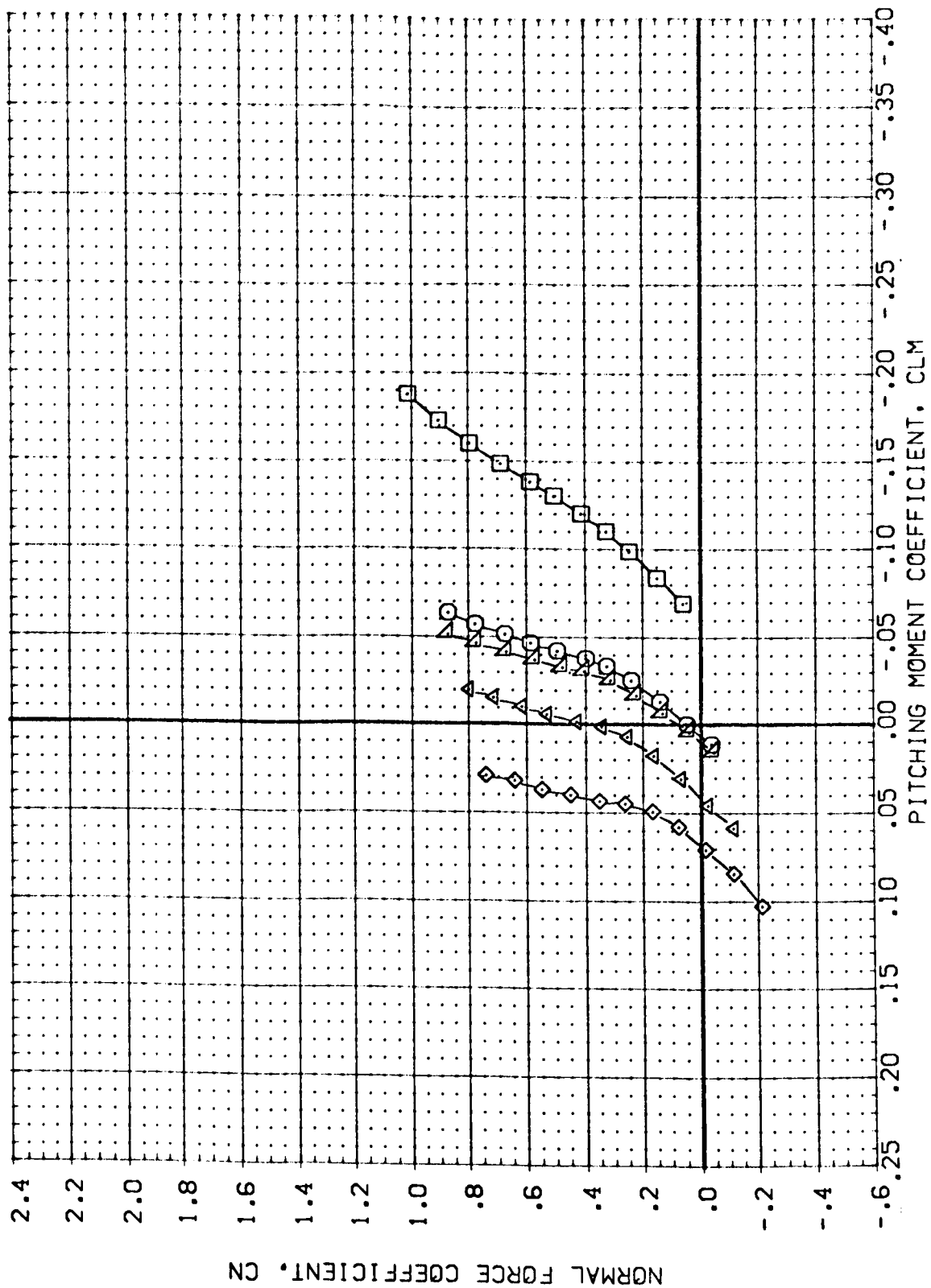


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398
 (C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPOBRK	BDELAP	REFERENCE INFORMATION
(F87C08)	MSFC 574 (CA48) CRB 139B	.000	.000	999.999	.000	SREF 2690.0000 SC.F.T.
(F87C15)	MSFC 574 (CA48) CRB 139B	.000	15.000	999.999	.000	LREF 474.8000
(F87C21)	MSFC 574 (CA48) CRB 139B	.000	-40.000	999.999	13.750	BREF 936.7000
(F87C18)	MSFC 574 (CA48) CRB 139B	.000	-20.000	999.999	.000	X-RP 838.7000
(F87C24)	MSFC 574 (CA48) CRB 139B	.000	.000	999.999	.000	Y-RP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.999	-14.250	Z-RP .0000
					SCALE	.0040

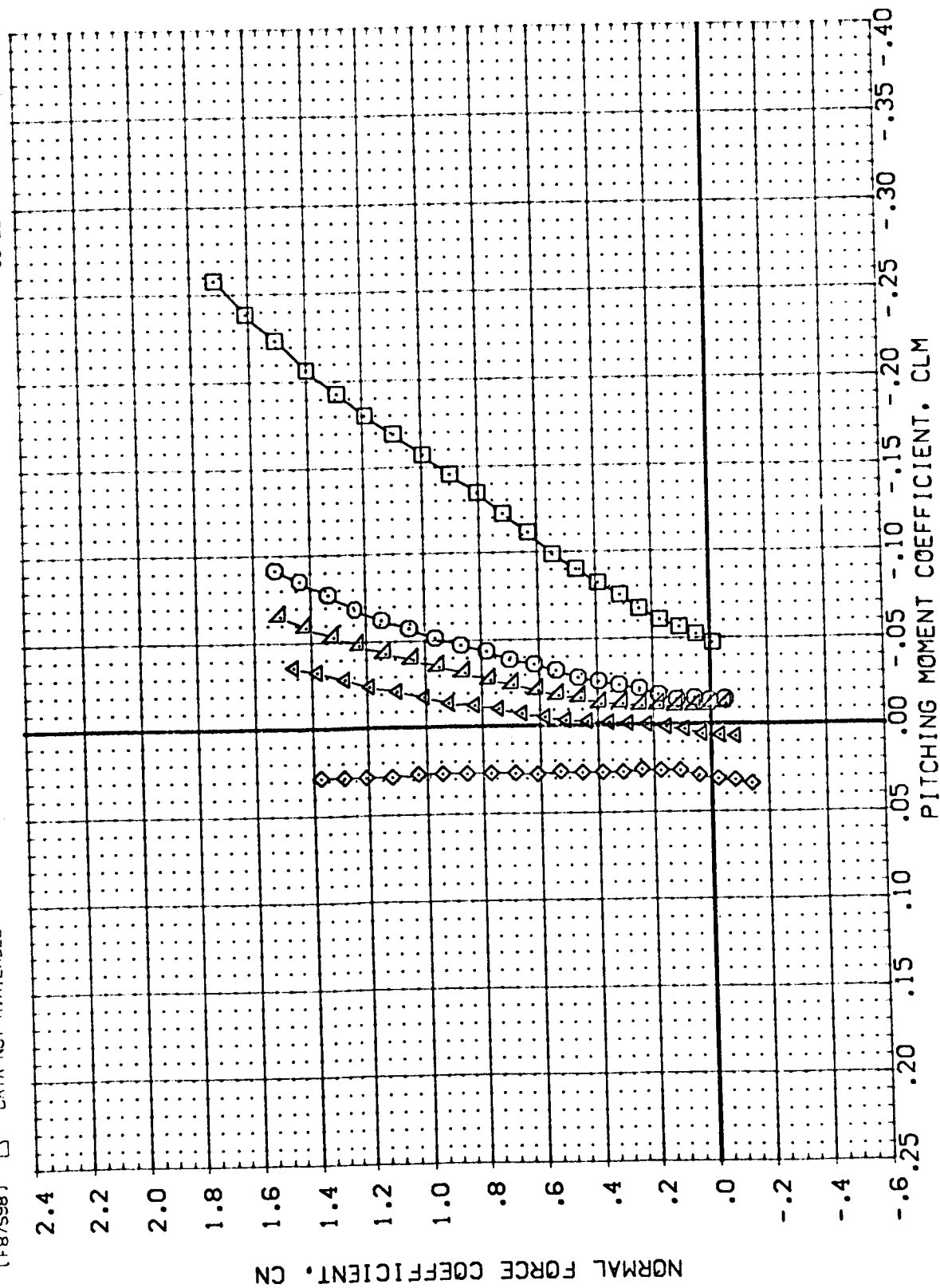


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMCL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574 (CA48)	ORB 1398
(F87C15)	MSFC 574 (CA48)	ORB 1398
(F87C21)	MSFC 574 (CA48)	ORB 1398
(F87C18)	MSFC 574 (CA48)	ORB 1398
(F87C24)	MSFC 574 (CA48)	ORB 1398
(F87S98)	MSFC 574 (CA48)	ORB 1398

BETA ELEVTR SPDRBK BOFLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SRF	2690.0000	SC.F.
.000	15.000	999.990	13.750	LRFF	474.8000	SC.F.
.000	-40.000	999.990	-14.250	BRFF	936.7000	SC.F.
.000	-20.000	999.990	.000	XVRP	838.7000	SC.F.
.000	.000	999.990	-14.250	VVRP	.0000	SC.F.
.000	-20.000	999.990	-14.250	ZVRP	.0000	SC.F.
.000	.000	999.990	.000	SCALE	.0040	SC.F.

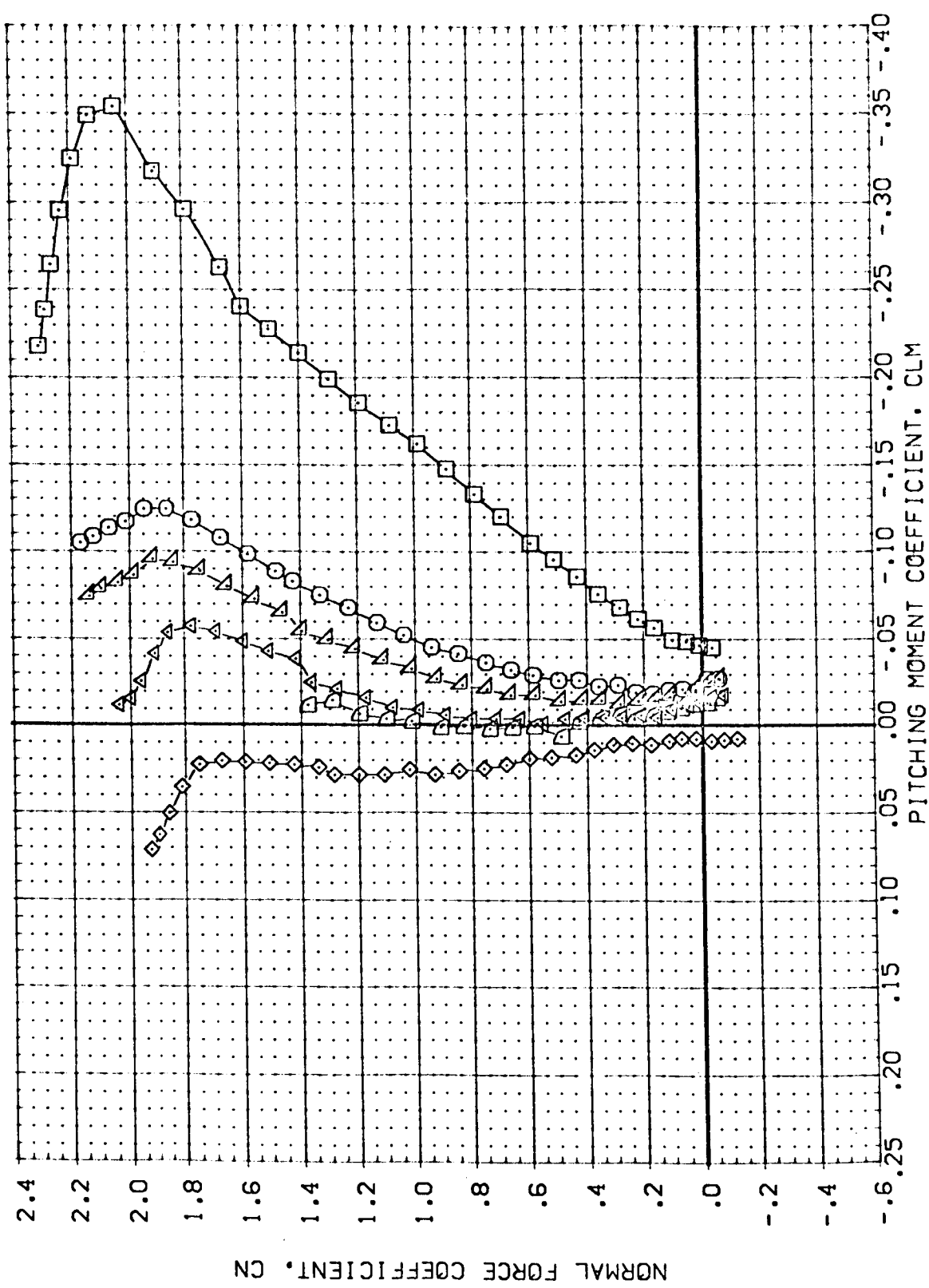


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA18) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SC. 1.
(F87C15)	MSFC 574(CA18) CRB 139B	.000	15.000	999.990	13.750	LRLE 474.8000
(F87C17)	MSFC 574(CA18) CRB 139B	.000	-40.000	999.990	-14.250	BRLE 936.7000
(F87C18)	MSFC 574(CA18) CRB 139B	.000	-70.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA18) CRB 139B	.000	.000	999.990	.000	YMRP .0000
(F87S58)	DATA NC AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

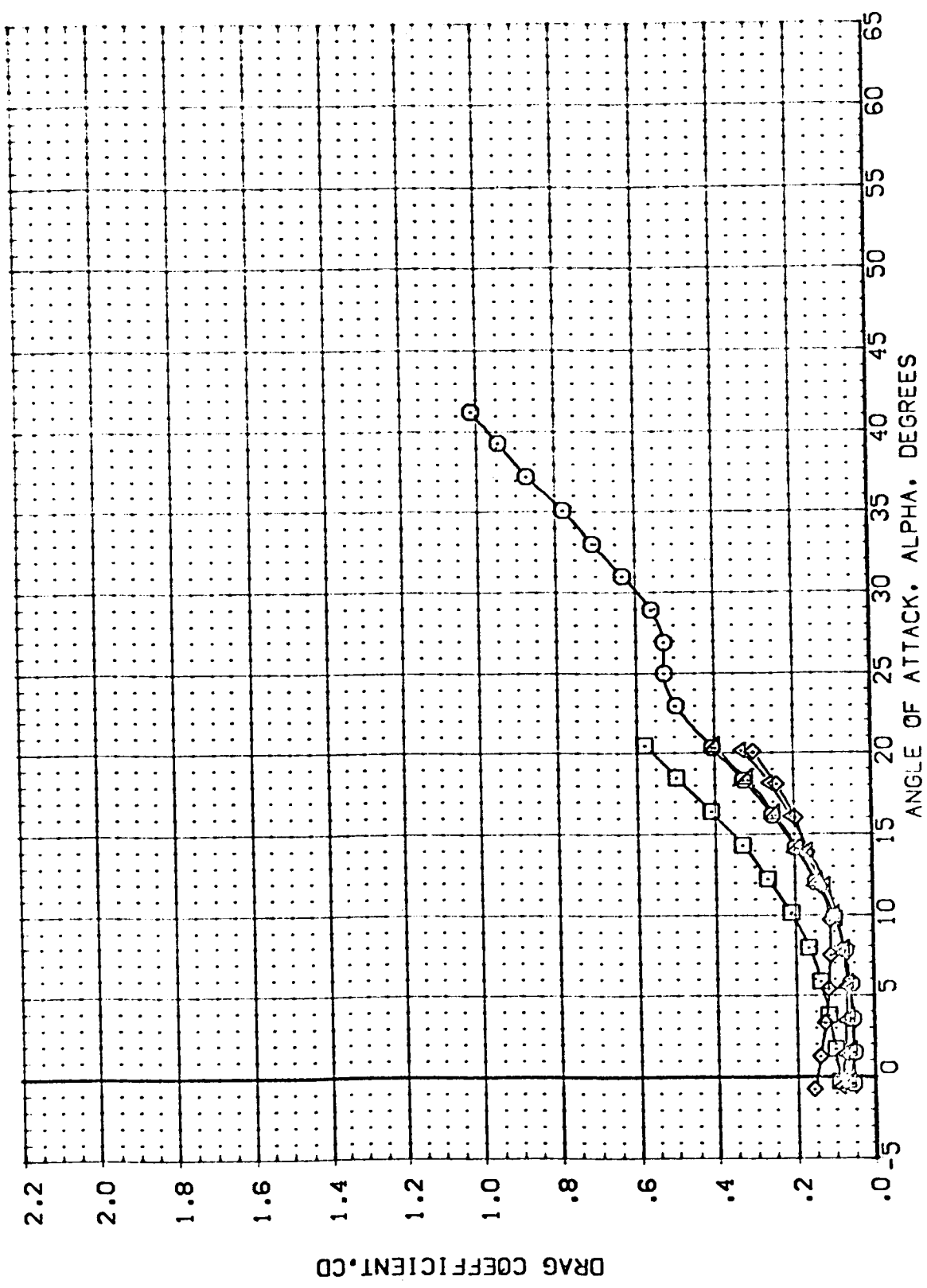


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPOCK	3D CLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	.000	2590.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.999	.000	474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.999	3.7500	936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.999	-1.4.2500	838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.999	-1.4.2500	.0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.999	-1.4.2500	.0000
					SCALE	.0010

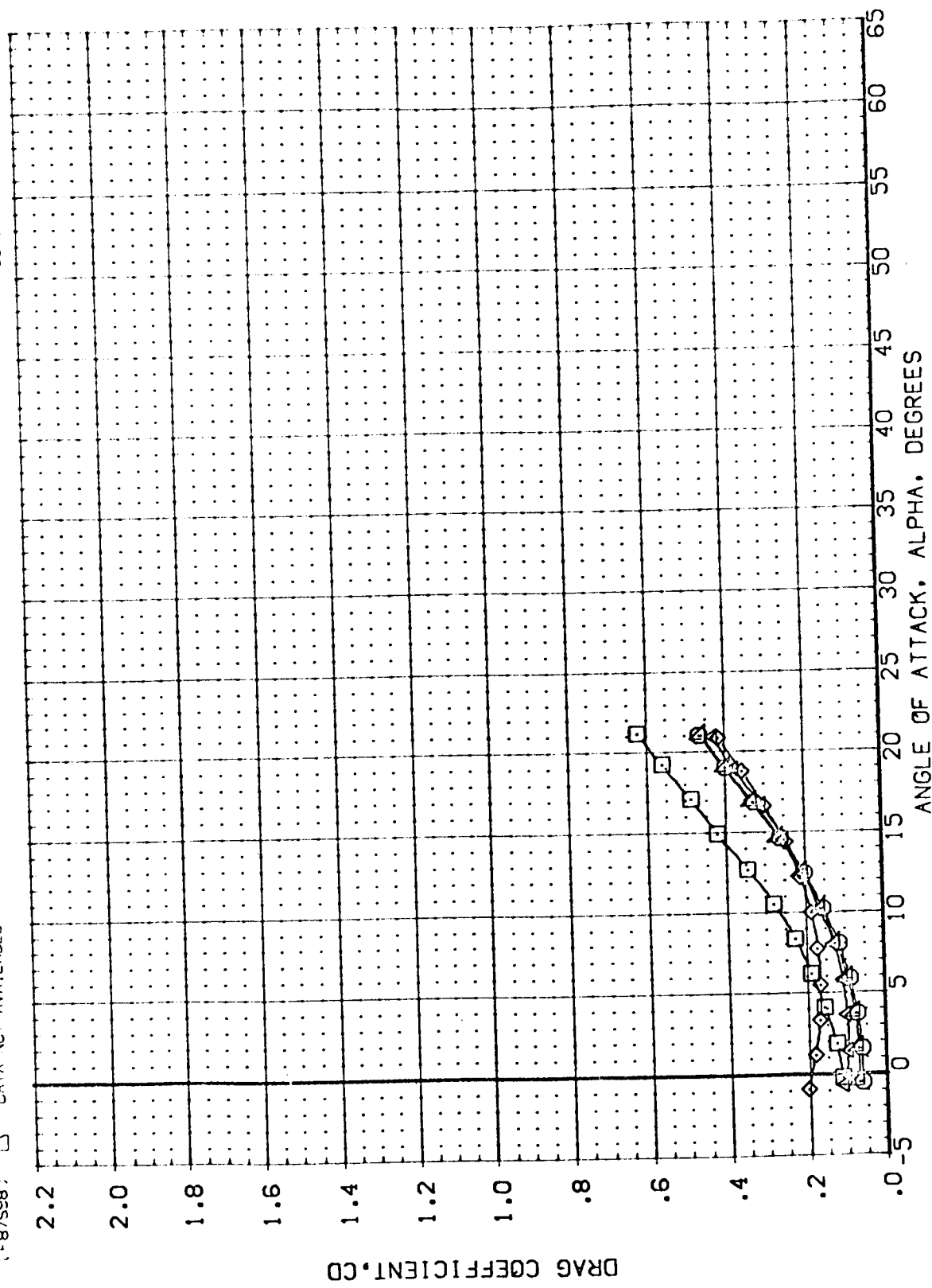


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(B)MACH = .89



C-3

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SC.F.T.
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF	2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	REF	474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF	936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP	838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	-14.250	ZMRP	.0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	SCALE	.0040

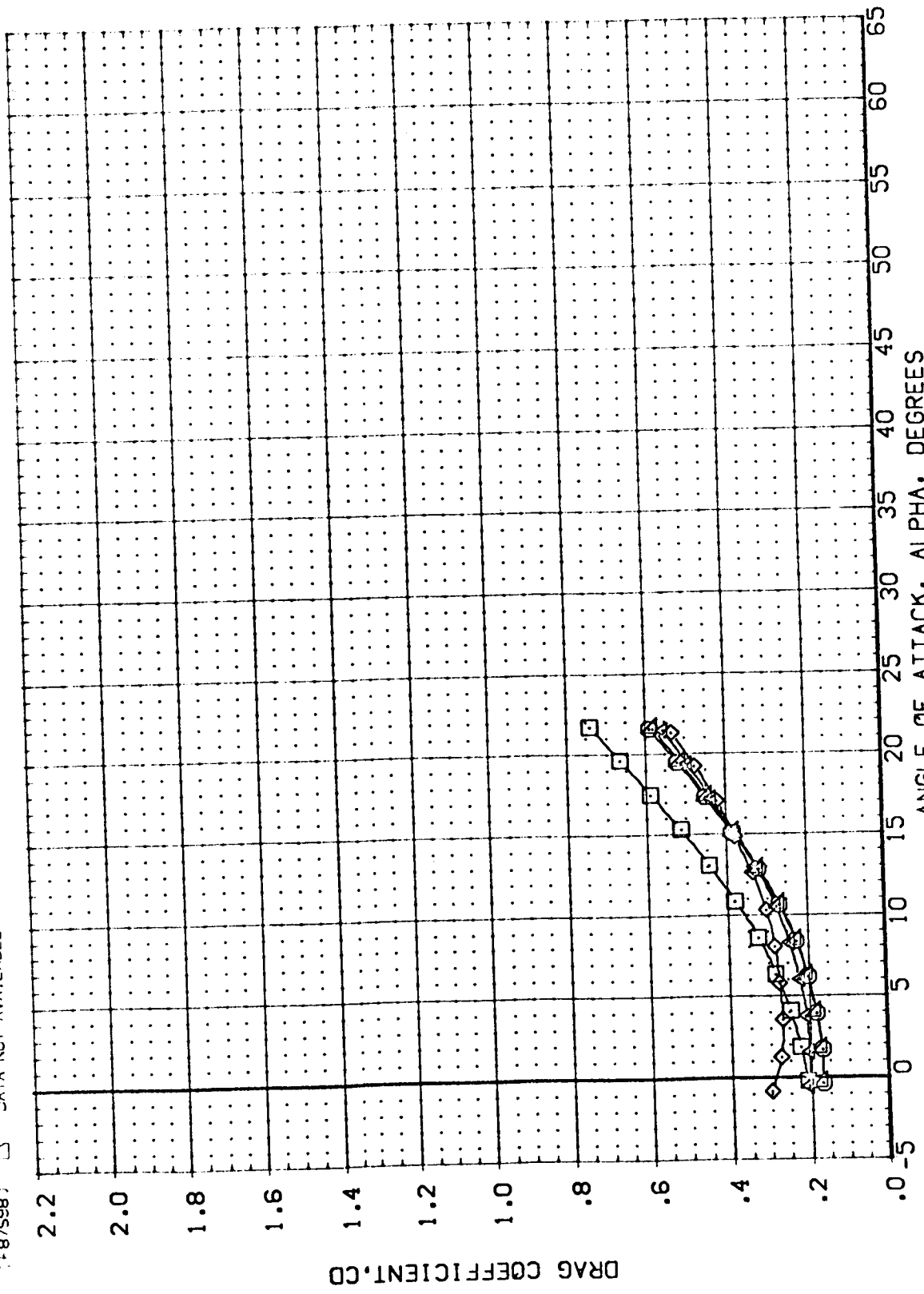


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(COMACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87C15)	MSFC 574(OA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87C21)	MSFC 574(OA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87C18)	MSFC 574(OA48) CRB 1398	.000	-20.000	999.990	.000	XVRP 838.7000 N.
(F87C24)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	-14.250	VVRP .0000 N.
(F87S88)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVRP .0000 N.
						SCALE .0040

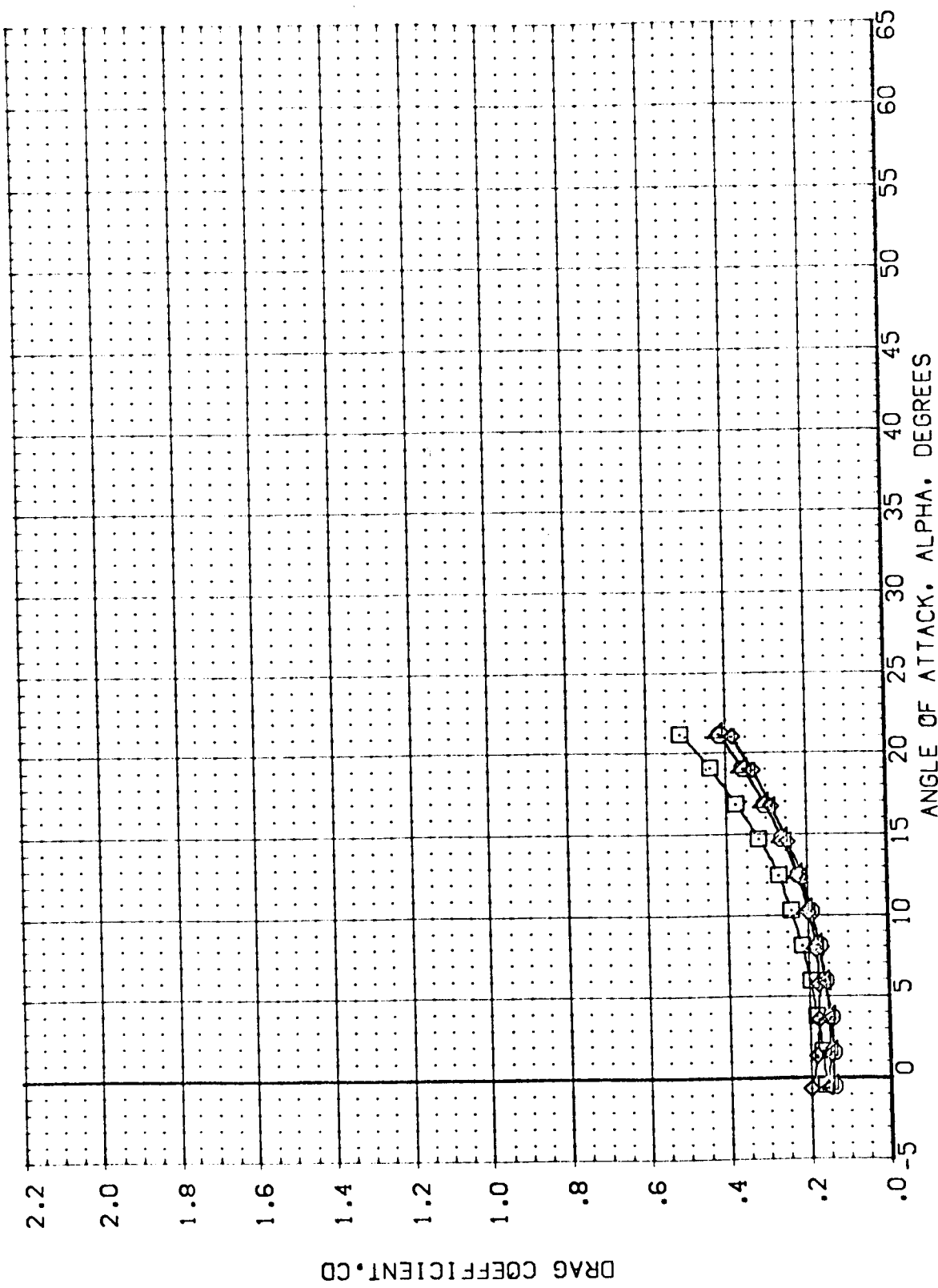


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(D) VACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87C15)	MSEC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSEC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSEC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XVRP 838.7000
(F87C24)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	YVRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVRP .0000
					SCALE	.0040

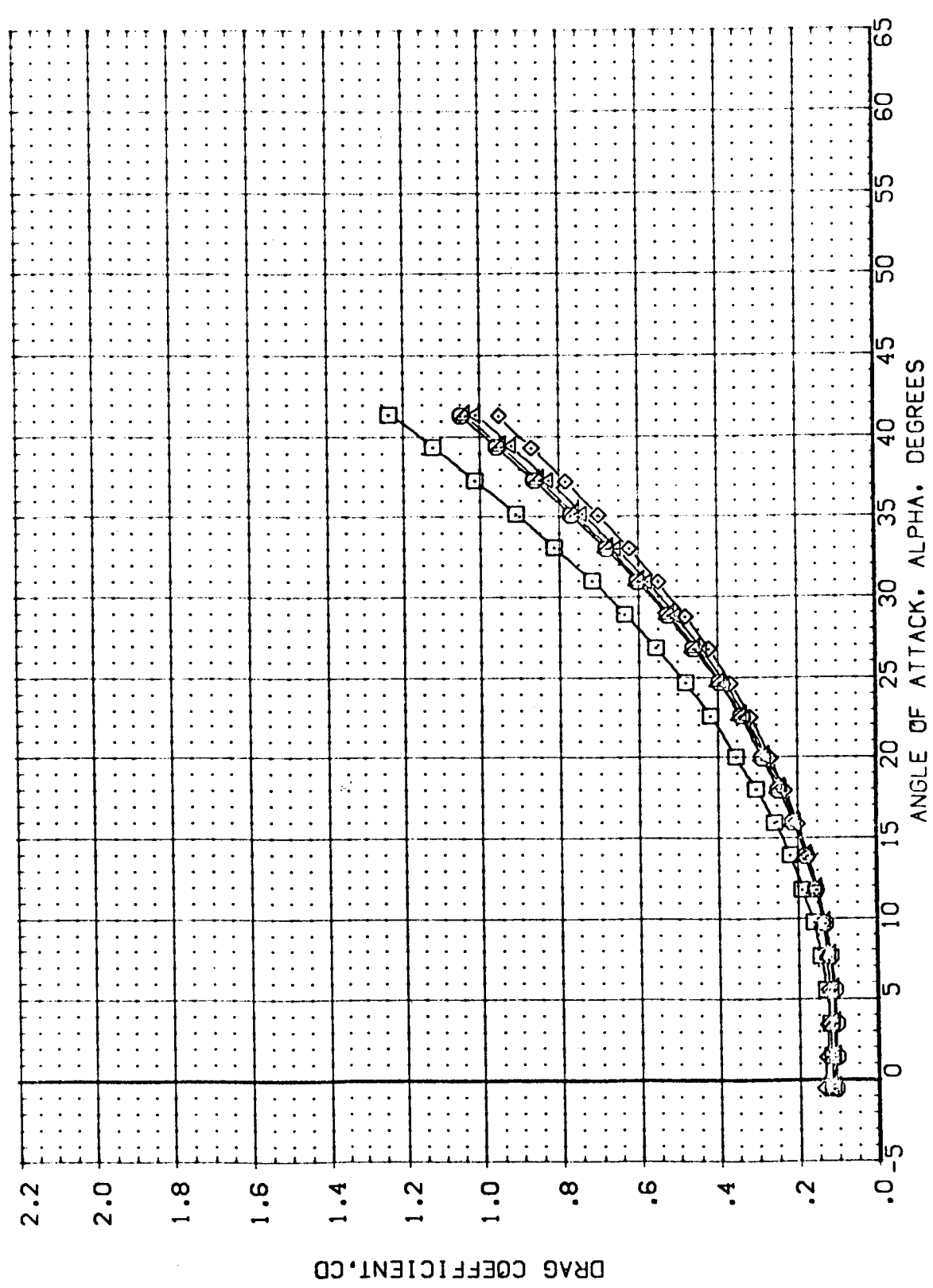


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(CDMACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 1399
 (F87C15) MSFC 574(CA48) CRB 1393
 (F87C21) MSFC 574(CA48) CRB 1393
 (F87C18) MSFC 574(CA48) CRB 1393
 (F87C24) MSFC 574(CA48) CRB 1393
 (F87C08) MSFC 574(CA48) CRB 1399

BETA - .000
 ELEVTR .000
 SPDRBK 999.990
 BOCLAP .000
 SREF 2690.0000
 REF 474.8000
 BRSE 935.7000
 XVRB 838.7000
 YVRB .0000
 ZVRB .0000
 SCALE .0040

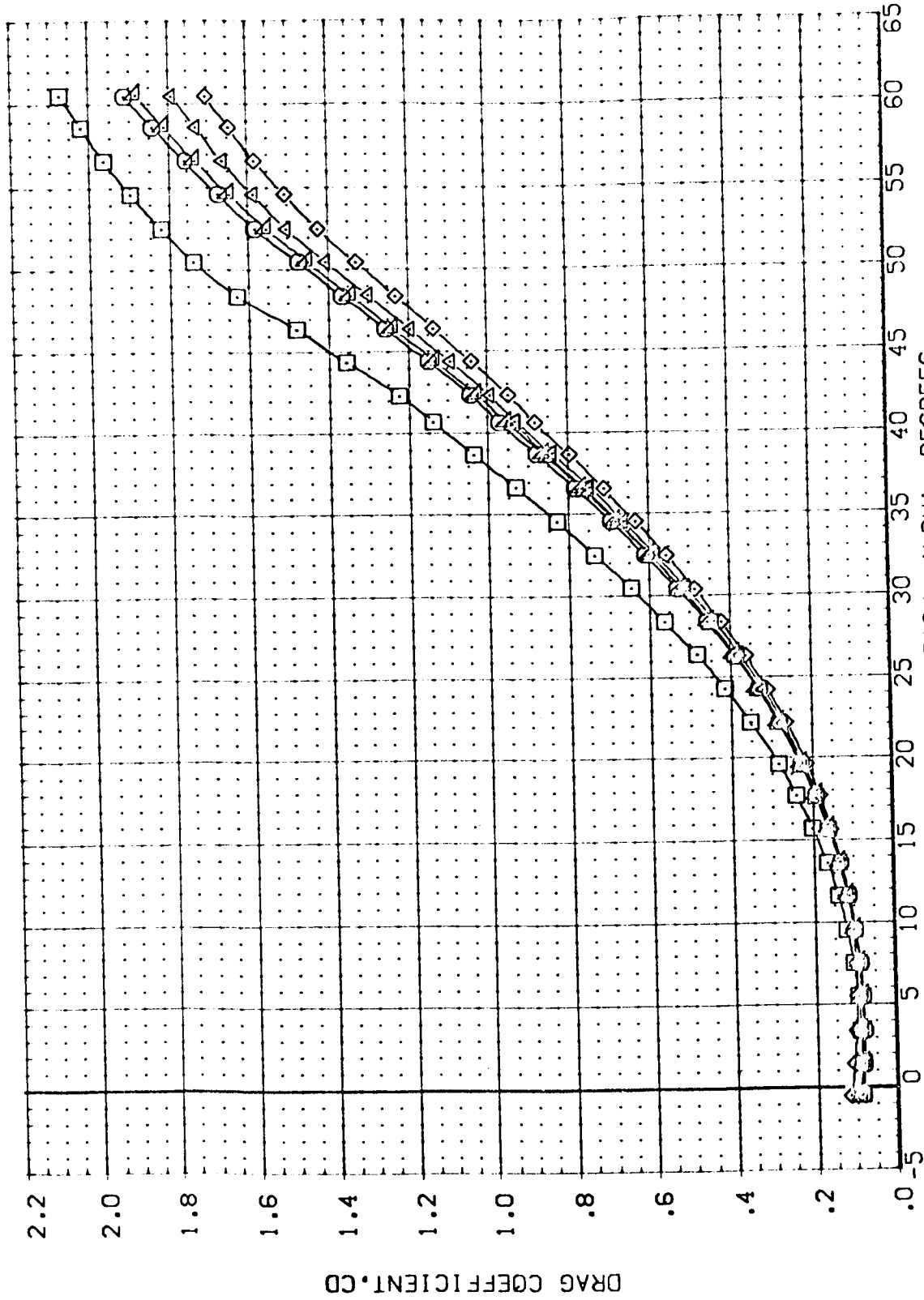


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV°R	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSC 574(CA18) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87C15)	MSC 574(CA18) CRB 1393	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSC 574(CA18) CRB 1393	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSC 574(CA18) CRB 1393	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSC 574(CA18) CRB 1393	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

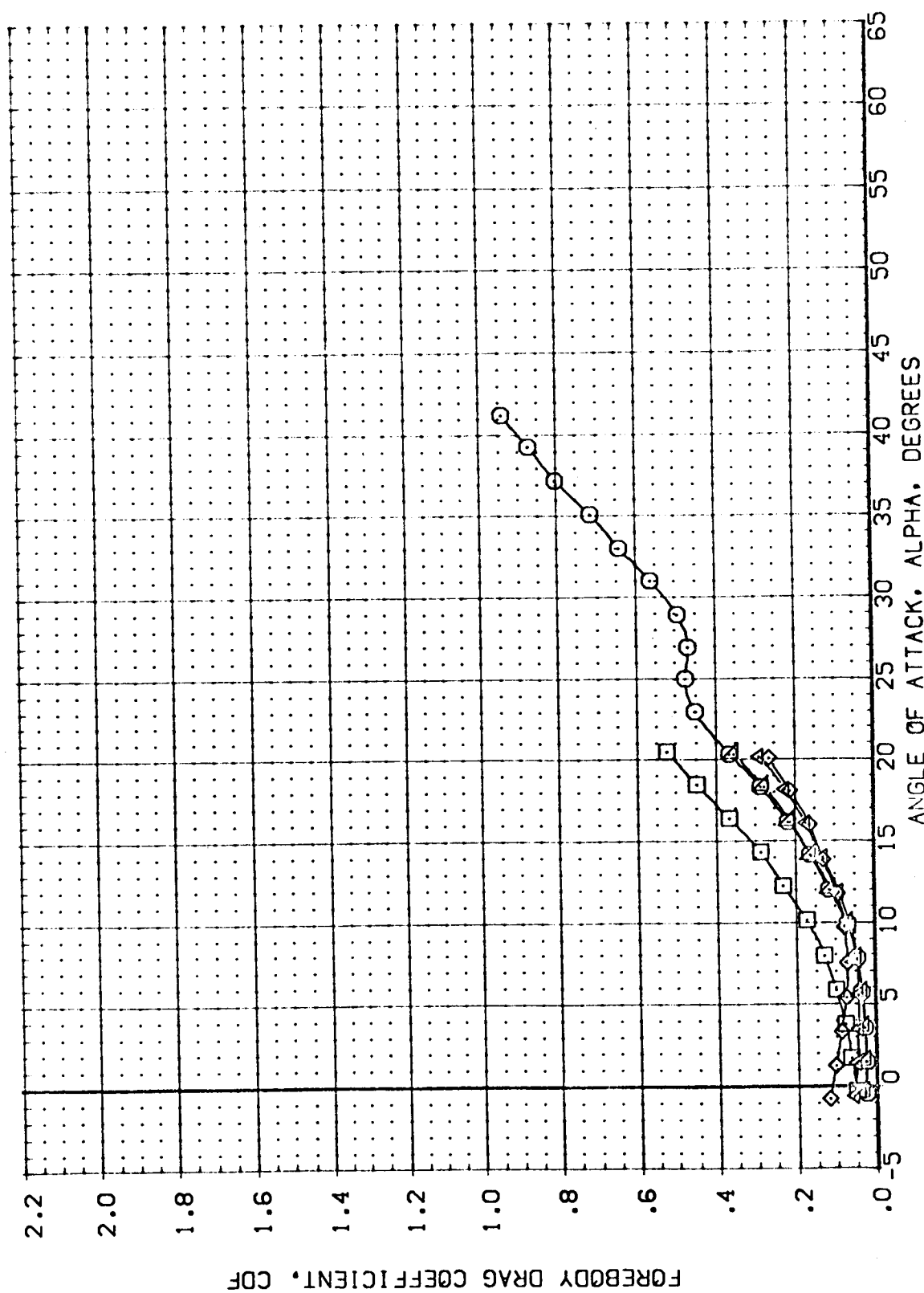


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

WSEC 574(CA48) CRB 1398 SREF 2690.0000 53.5°

WSEC 574(CA48) CRB 1399 LREF 474.8000 77.0°

WSEC 574(CA48) CRB 1399 BREF 936.7000 77.0°

WSEC 574(CA48) CRB 1399 XWRP 838.0000 77.0°

WSEC 574(CA48) CRB 1399 YWRP 0.0000 77.0°

WSEC 574(CA48) CRB 1399 ZWRP 0.0000 77.0°

DATA NOT AVAILABLE SCALE 1.0000

BETA ELEVTR SPOBRK BOELAP

0.00 0.00 999.990 0.00

0.00 15.000 999.990 13.750

0.00 -40.000 999.990 -14.250

0.00 -20.000 999.990 0.000

0.00 -20.000 999.990 -14.250

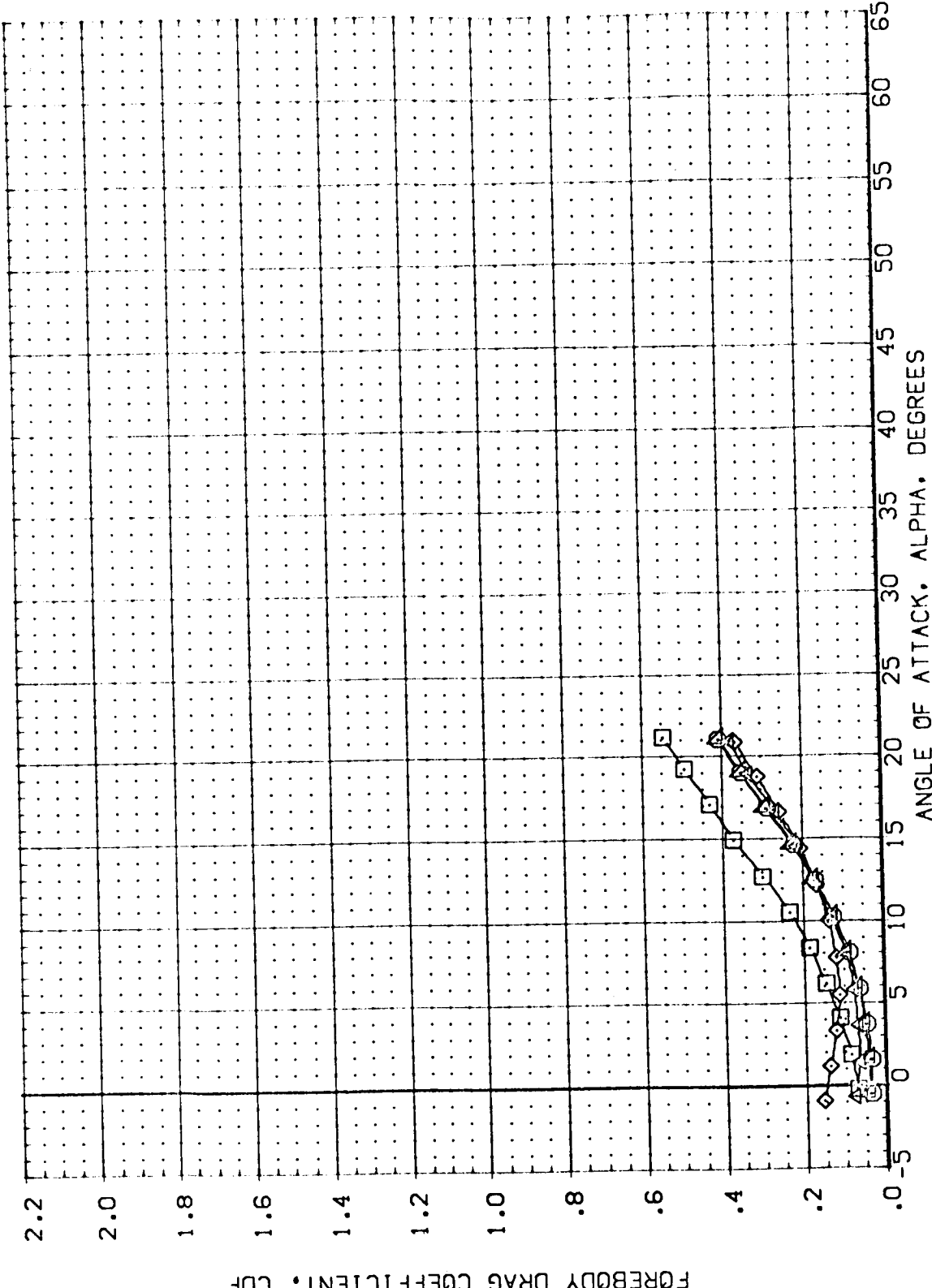


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(B)MACH = .89



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
{F87C08}	MSFC 574 (CA48) ORB 139B	.000	.000	999.990	.000	2690.0000
{F87C15}	MSFC 574 (CA48) ORB 139B	.000	15.000	999.990	13.750	474.8000
{F87C21}	MSFC 574 (CA48) ORB 139B	.000	-40.000	999.990	-14.250	936.7000
{F87C18}	MSFC 574 (CA48) ORB 139B	.000	-20.000	999.990	.000	838.7000
{F87C24}	MSFC 574 (CA48) ORB 139B	.000	.000	999.990	-14.250	.0000
{F87S98}	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	.0000
					SCALE	.0040

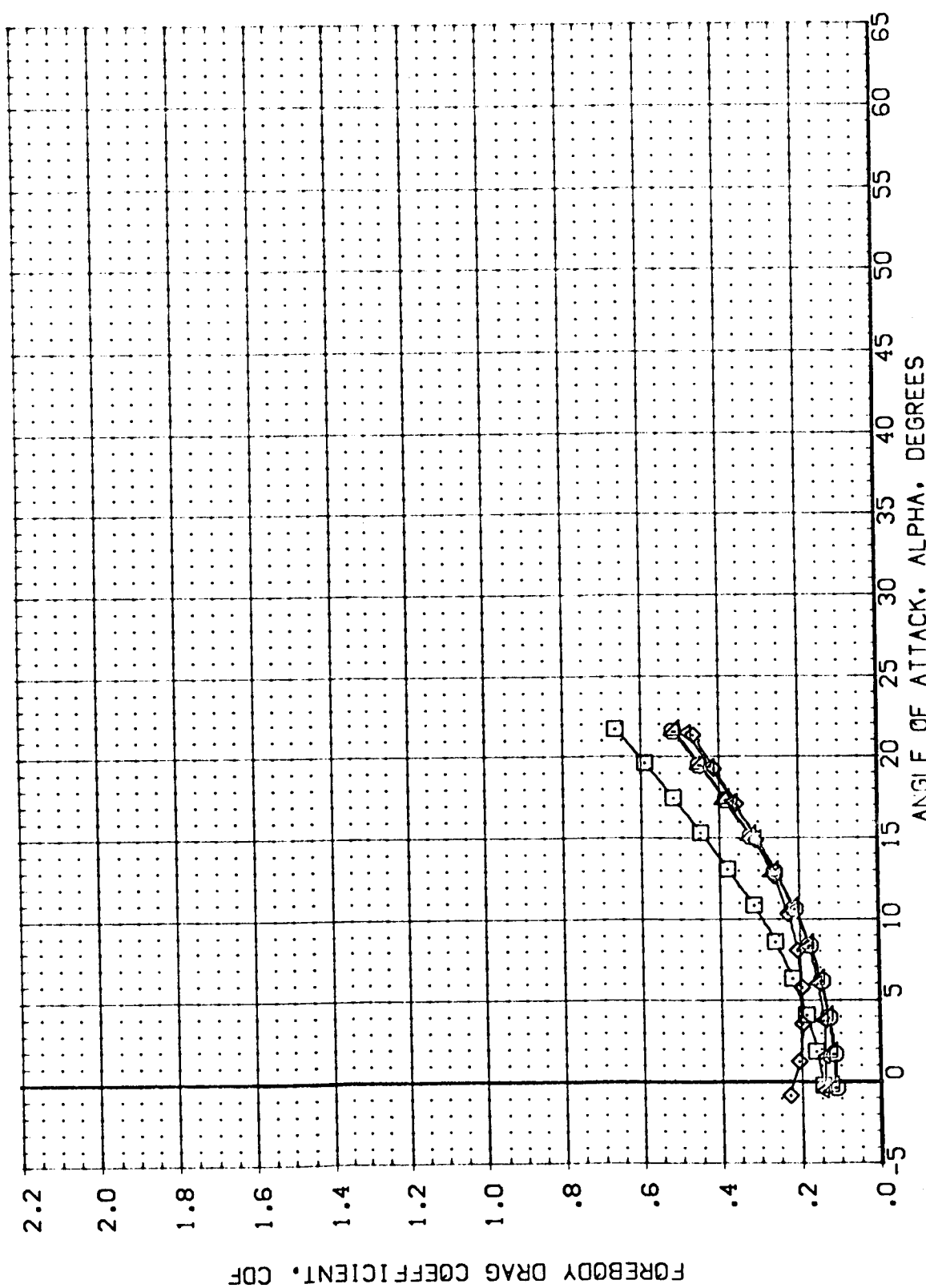


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

[F87C08] WSFC 574(CA48) CRB 139B

[F87C15] WSFC 574(CA48) CRB 139B

[F87C21] WSFC 574(CA48) CRB 139B

[F87C28] WSFC 574(CA48) CRB 139B

[F87C24] WSFC 574(CA48) CRB 139B

[F87S98] DATA NOT AVAILABLE

BETA ELEVTR SPOBKK BOFLAP REFERENCE INFORMATION SCALE

.000 .000 999.990 .000 SREF 2690.0000 SC.F.

.000 15.000 999.990 13.750 LREF 474.8000

.000 -10.000 999.990 -14.250 BREF 936.7000

.000 -20.000 999.990 .000 XMRP 838.7000

.000 .000 999.990 -14.250 YMRP .0000

.000 -20.000 999.990 -14.250 ZMRP .0000

SCALE .0040

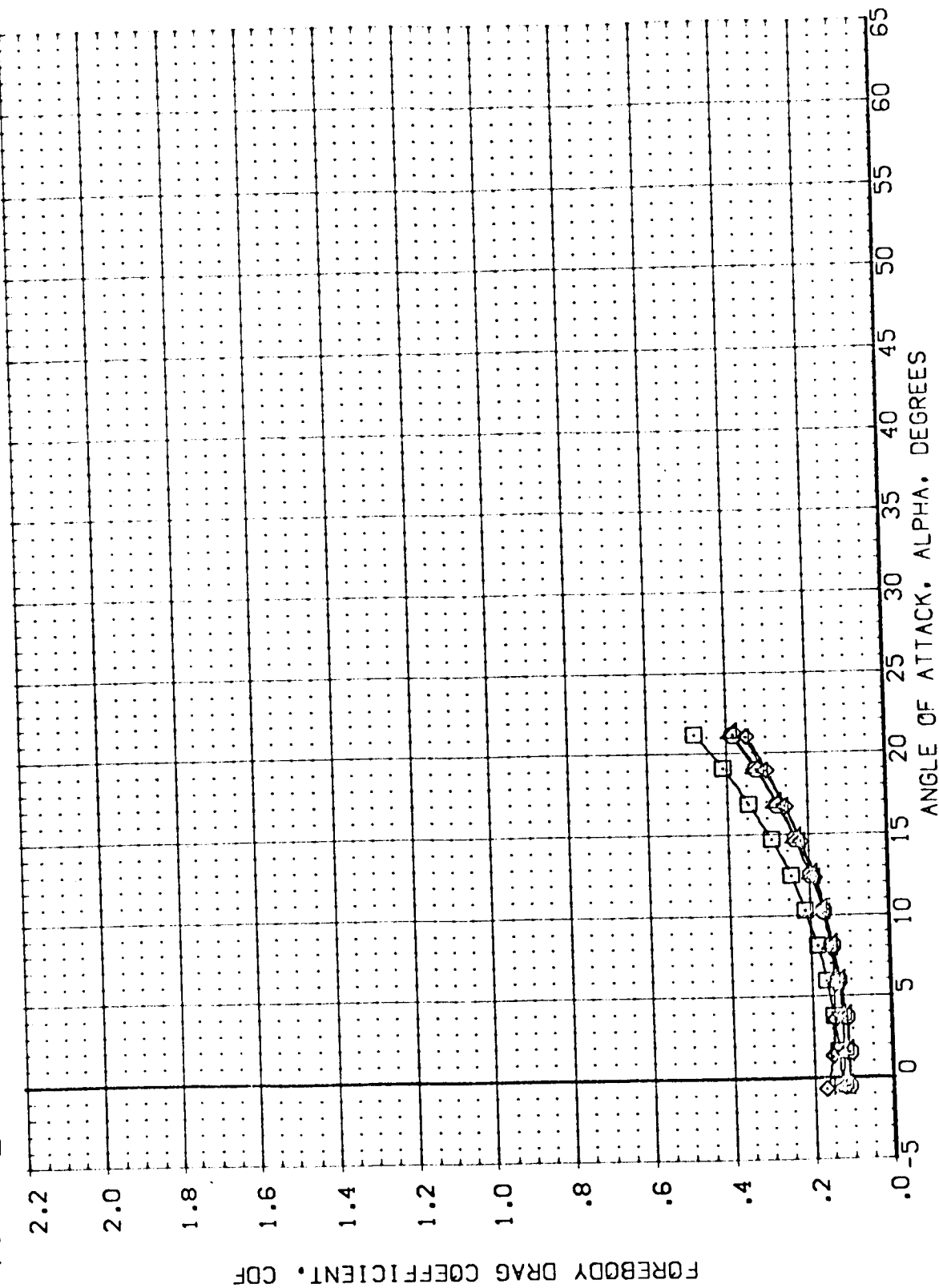


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

COYVACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BCFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) CRB 399	.000	.000	999.999	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 399	.000	.000	999.999	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	.000	XMRP 938.7000
(F87C24)	MSFC 574(CA48) CRB 399	.000	.000	999.999	-14.250	YMRP .0000
(F87C24)	MSFC 574(CA48) CRB 399	.000	.000	999.999	-14.250	ZMRP .0000
(F87C24)	MSFC 574(CA48) CRB 399	.000	.000	999.999	-14.250	SCALE .0000

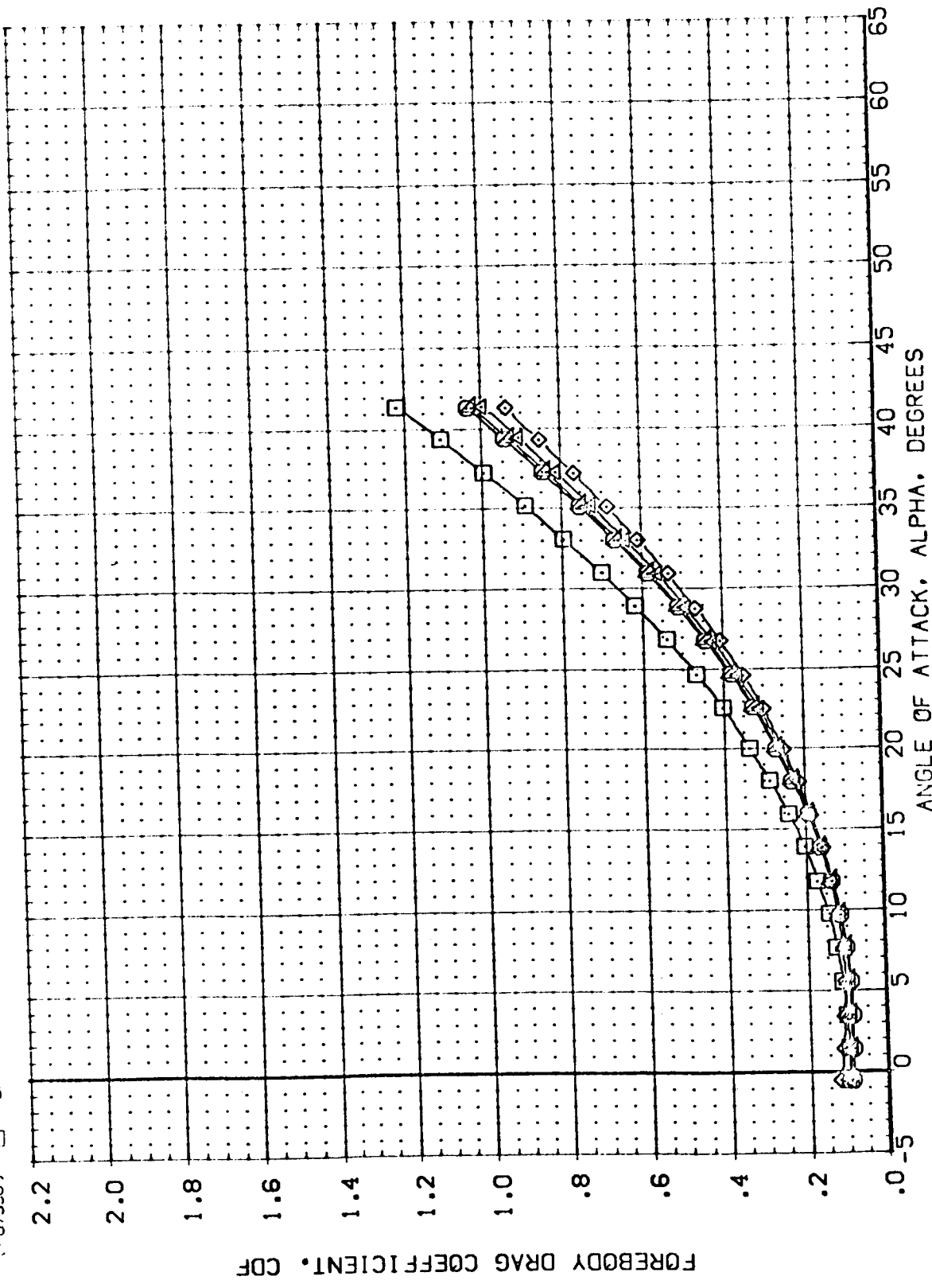


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BCFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CR3 398	.000	.000	999.999	.000	SPREF 2590.0000 SC.F.T.
(F87C15)	MSFC 574(CA48) CR3 398	.000	15.000	999.999	.000	SPREF 474.8000
(F87C21)	MSFC 574(CA48) CR3 398	.000	-40.000	999.999	.000	SPREF 936.7000
(F87C28)	MSFC 574(CA48) CR3 398	.000	-20.000	999.999	.000	SPREF 838.7000
(F87C24)	MSFC 574(CA48) CR3 398	.000	-20.000	999.999	.000	SPREF 0.0000
(F87S98)	MSFC 574(CA48) CR3 398	.000	-20.000	999.999	.000	SPREF 0.0000
						SCALE 0.000

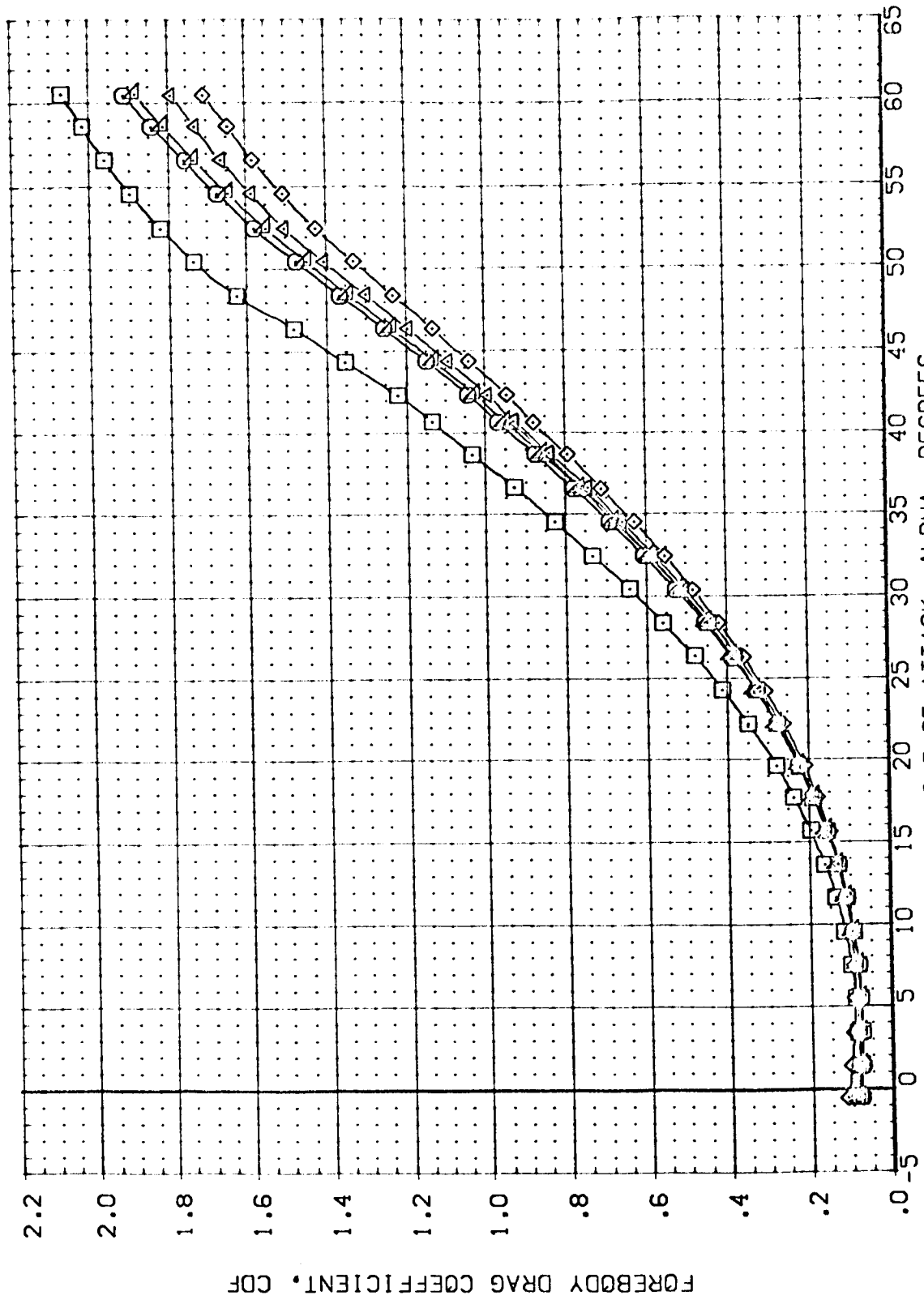


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
{F87C08}	MSFC 574(CA48) CR3 1393	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{F87C15}	MSFC 574(CA48) CR3 1393	.000	15.000	999.990	13.750	LREF 474.8000
{F87C21}	MSFC 574(CA48) CR3 1393	.000	-40.000	999.990	-14.250	BREF 936.7000
{F87C18}	MSFC 574(CA48) CR3 1393	.000	-20.000	999.990	.000	XVBP 838.7000
{F87C24}	MSFC 574(CA48) CR3 1393	.000	.000	999.990	-14.250	VMBP .0000
{F87S98}	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVBP .0000
					SCALE	.0040

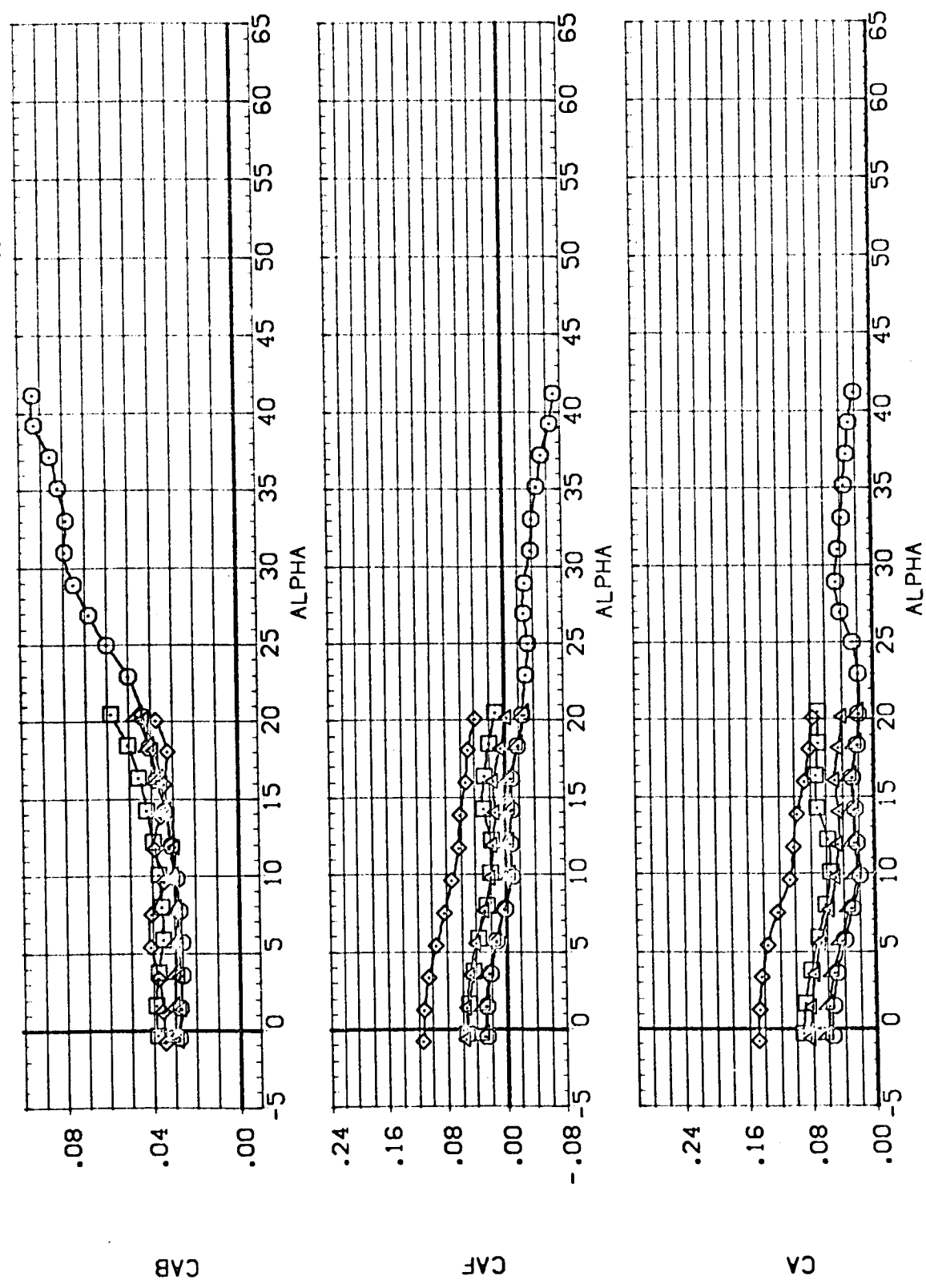


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

{A}MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	2690.0000 SQ.FT.
(F87C15)	MSFC 574 (CA48) CRB 1398	.000	15.000	999.990	13.750	474.8000
(F87C21)	MSFC 574 (CA48) CRB 1398	.000	-40.000	999.990	-14.250	936.7000
(F87C18)	MSFC 574 (CA48) CRB 1398	.000	-20.000	999.990	.000	838.7000
(F87C24)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	-14.250	.0000
(F87S88)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	.0000
					SCALE	.0040

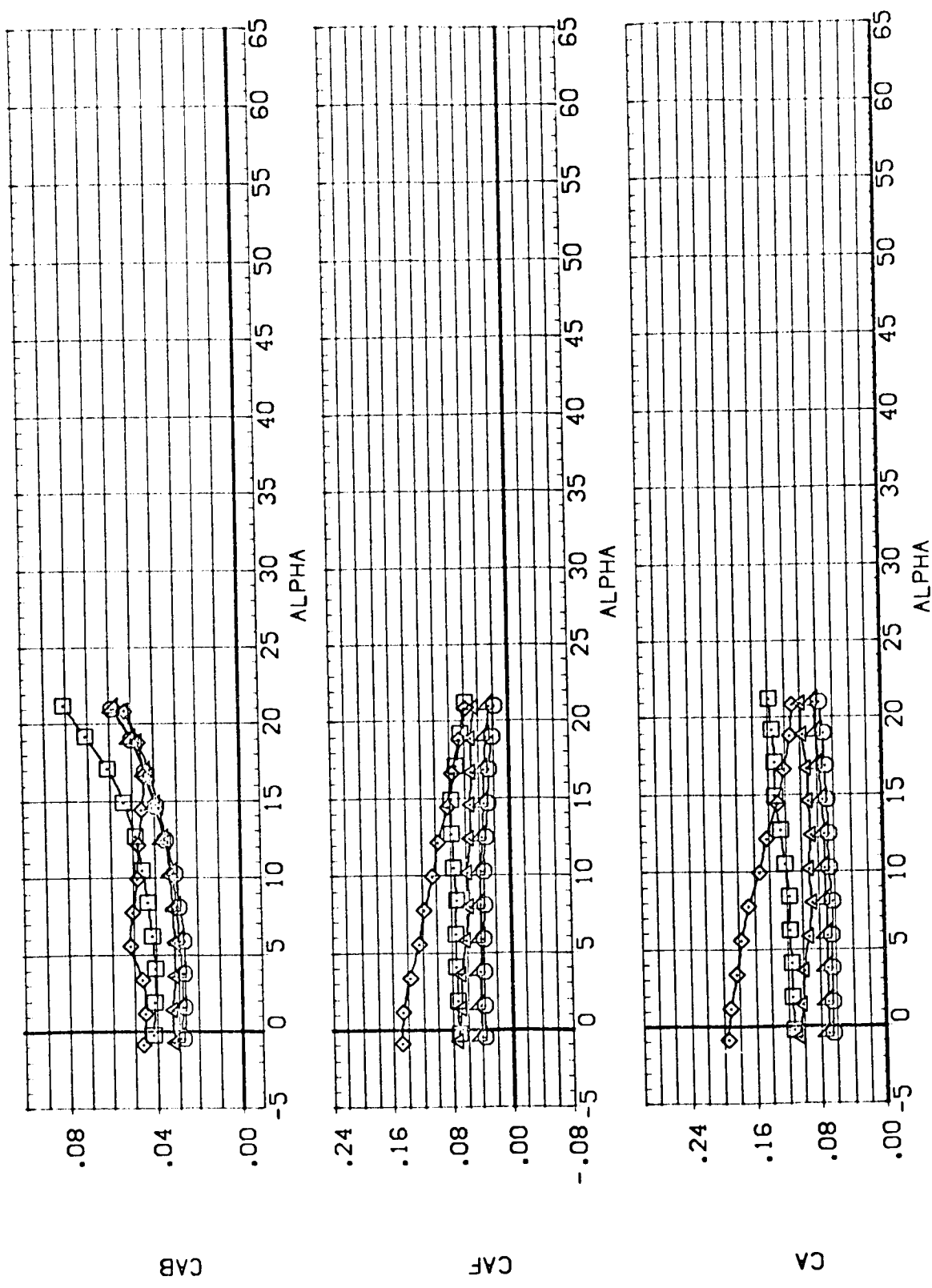


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(B) MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPO3RK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CR3 : 393	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CR3 : 393	.000	15.000	999.990	13.750	REF 474.8000
(F87C21)	MSFC 574(CA48) CR3 : 393	.000	-40.000	999.990	-14.250	BRF 936.7000
(F87C18)	MSFC 574(CA48) CR3 : 393	.000	-20.000	999.990	.000	MRP 838.7000
(F87C24)	MSFC 574(CA48) CR3 : 393	.000	-20.000	999.990	-14.250	MRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	MRP .0000
						SCALE .0040

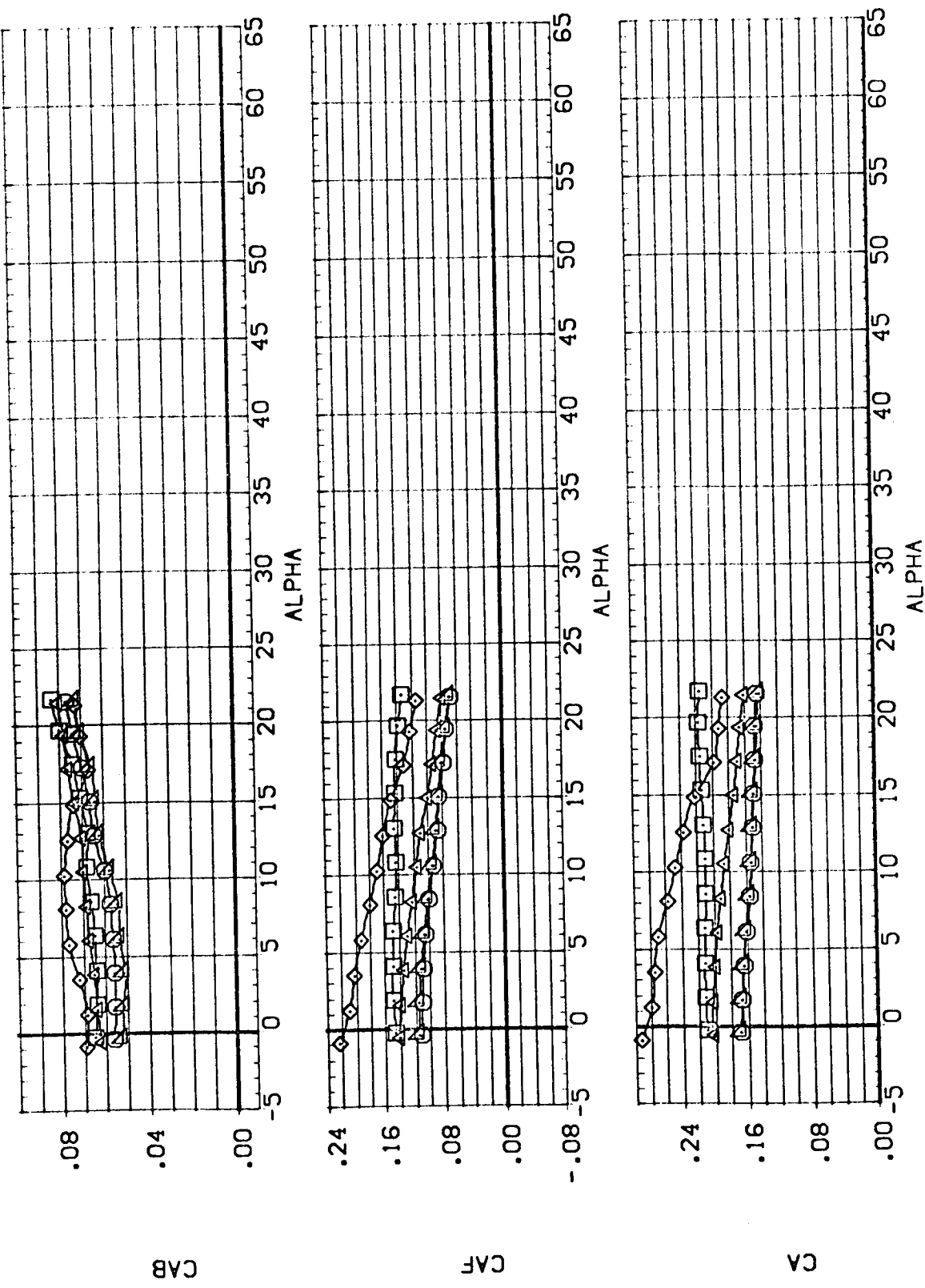


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CR3 1398	.000	.000	999.999	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CR3 1398	.000	15.000	999.999	13.750	UREF 474.8000
(F87C21)	MSFC 574(CA48) CR3 1398	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CR3 1398	.000	-20.000	999.999	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CR3 1398	.000	-20.000	999.999	-14.250	YMRP .0000
(F87598)	DATA NOT AVAILABLE	.000	-20.000	999.999	-14.250	ZMRP .0000
					SCALE	.0040

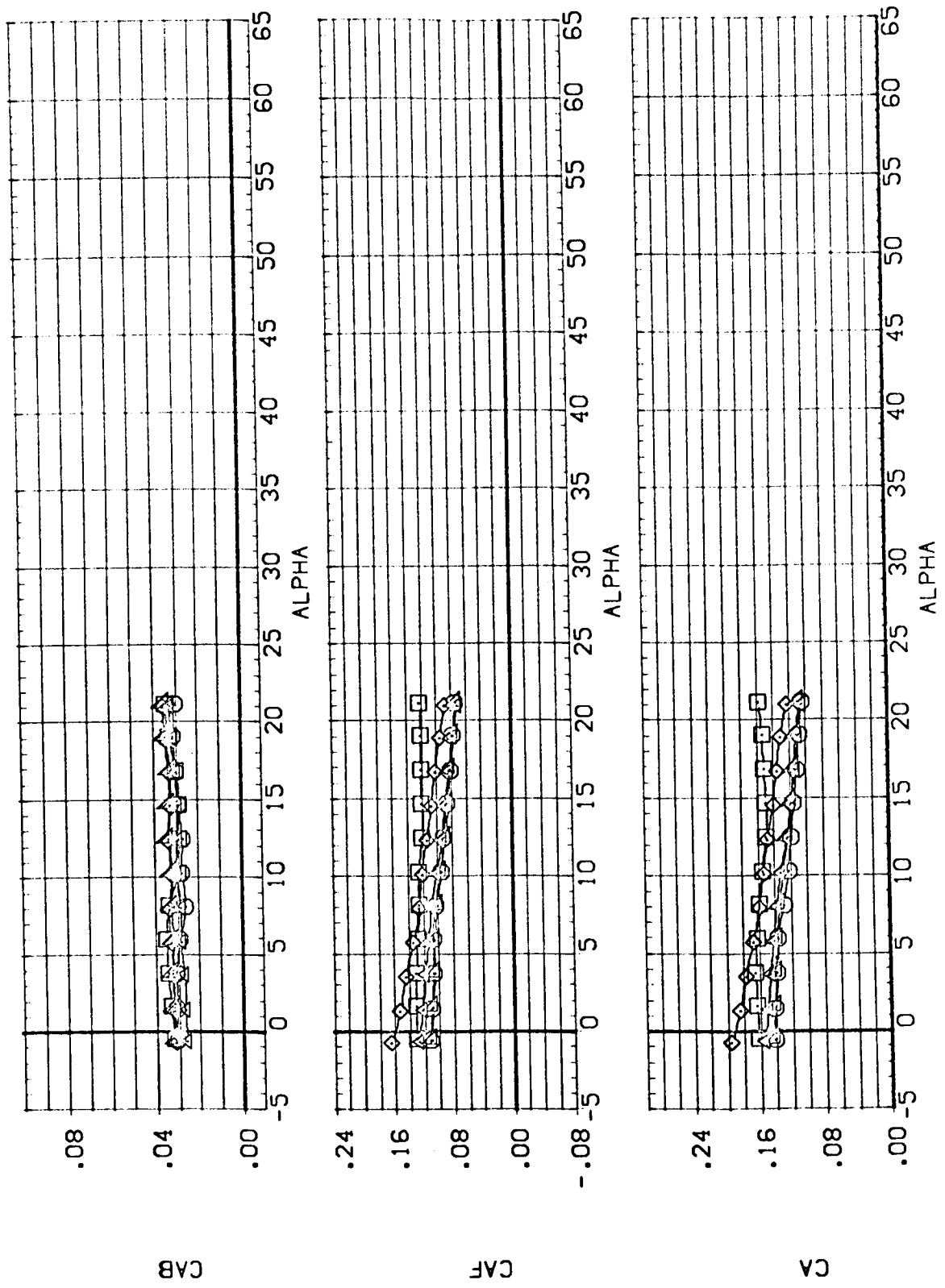


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPDBRK BDFLAP REFERENCE INFORMATION

(F87C08) MSFC 574(OA48) CRB 139B .000 .000 999.999 .000 SREF 2690.0000 SQ.FT.

(F87C15) MSFC 574(OA48) CRB 139B .000 15.000 999.999 .000 LREF 474.8000 IN.

(F87C21) MSFC 574(OA48) CRB 139B .000 -40.000 999.999 -13.750 BREF 936.7000 IN.

(F87C18) MSFC 574(OA48) CRB 139B .000 -20.000 999.999 .000 XMRP 838.7000 IN.

(F87C24) MSFC 574(OA48) CRB 139B .000 .000 999.999 -14.250 YMRP .0000 IN.

(F87S98) DATA NOT AVAILABLE .000 -20.000 999.999 -14.250 ZMRP .0000 IN.

SCALE .0040

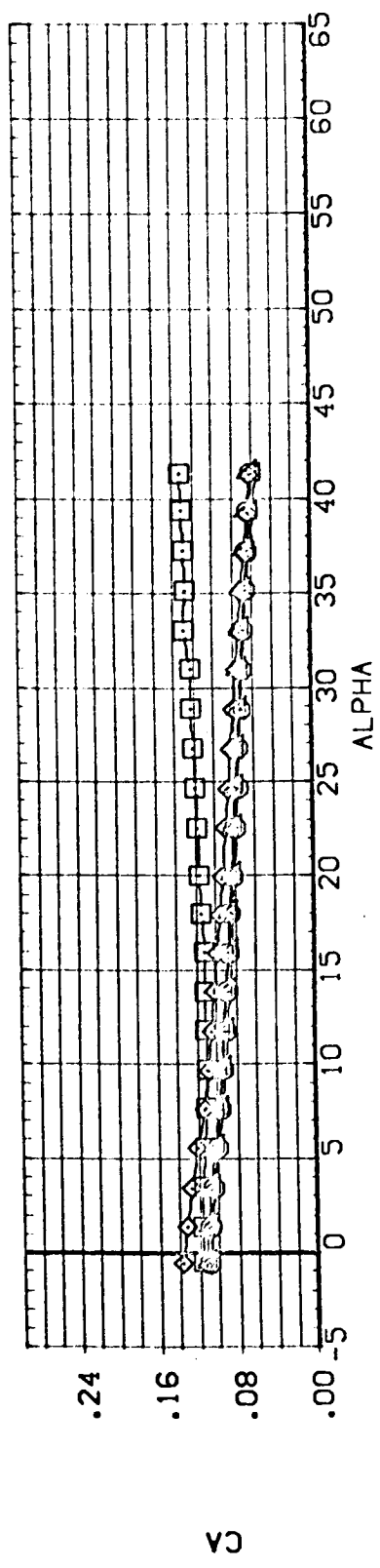
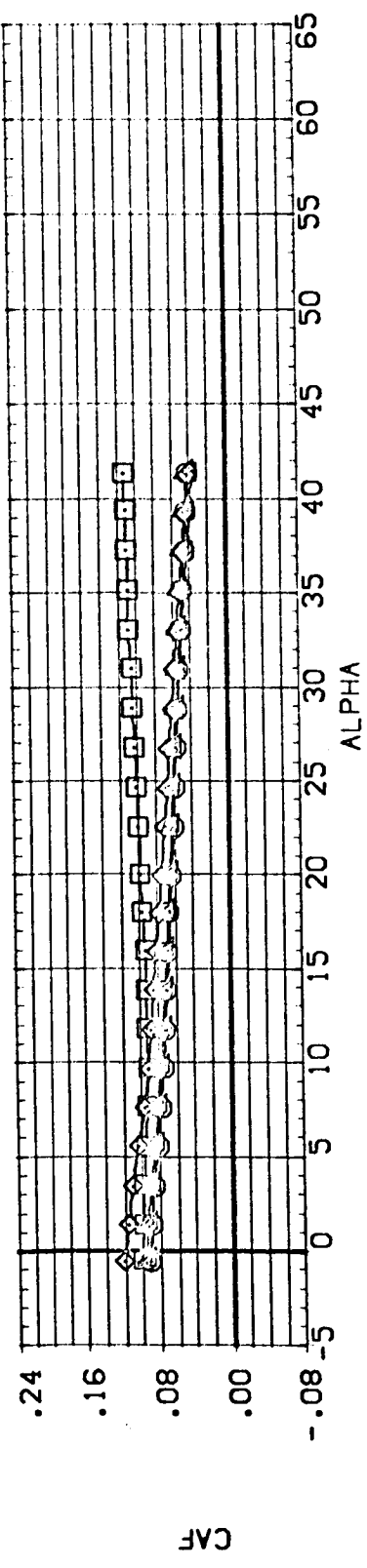
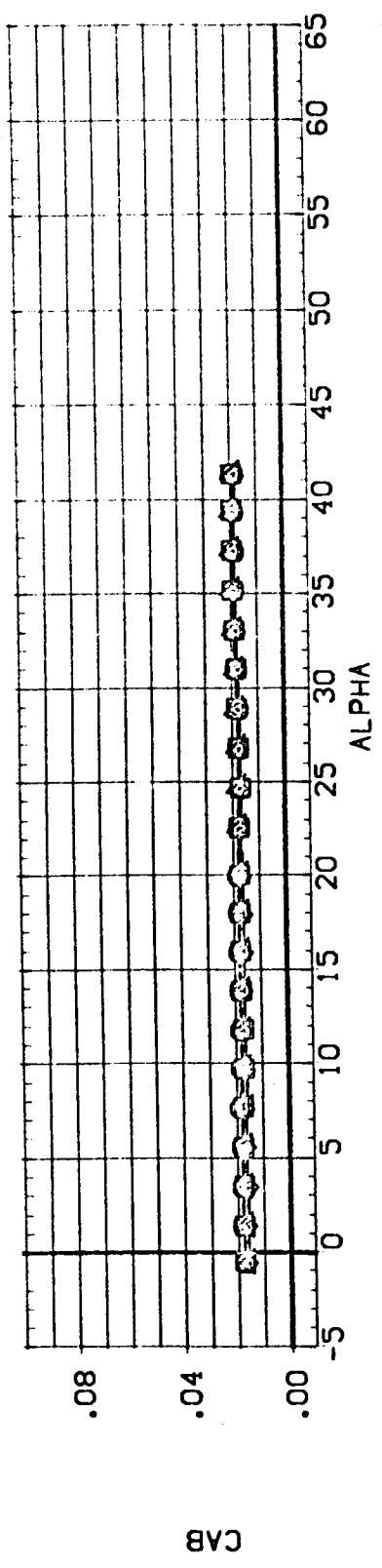


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SCALE
(F87C08)	VSFC 574 (CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690	.0000
(F87C15)	VSFC 574 (CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474	.0000
(F87C21)	VSFC 574 (CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936	.0000
(F87C18)	VSFC 574 (CA48) CRB 139B	.000	-20.000	999.990	.000	XVRP 838	.0000
(F87C24)	VSFC 574 (CA48) CRB 139B	.000	.000	999.990	-14.250	VVRP	.0000
(F87S98)	VSFC 574 (CA48) CRB 139B	.000	-20.000	999.990	-14.250	ZVRP	.0000
						SCALE	.0000

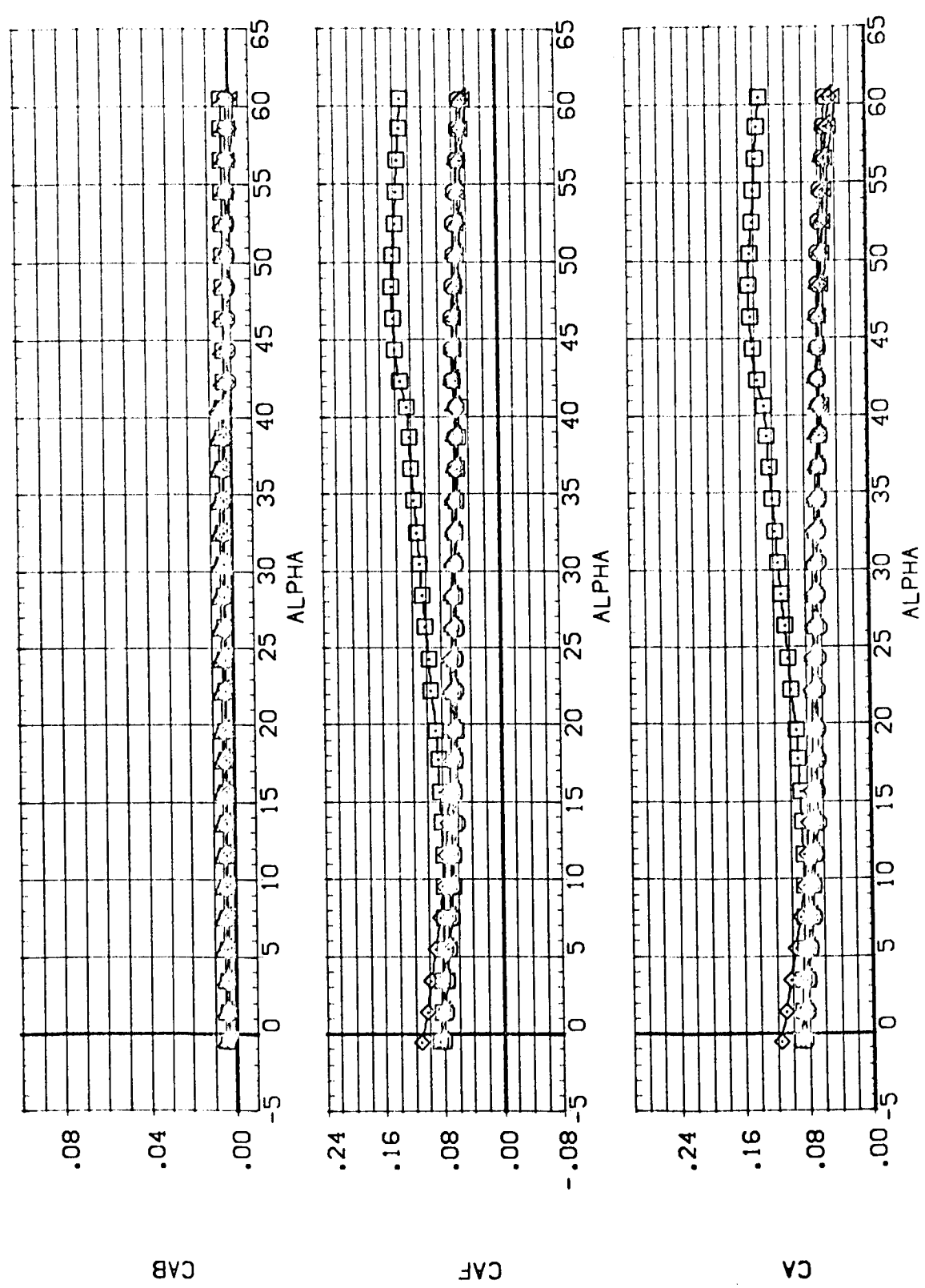


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.999	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.999	.000	XREF 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	-14.250	YREF .0000
(F87S98)	DATA NO. AVAILABLE	.000	-20.000	999.999	-14.250	ZREF .0000
					SCALE	.0040

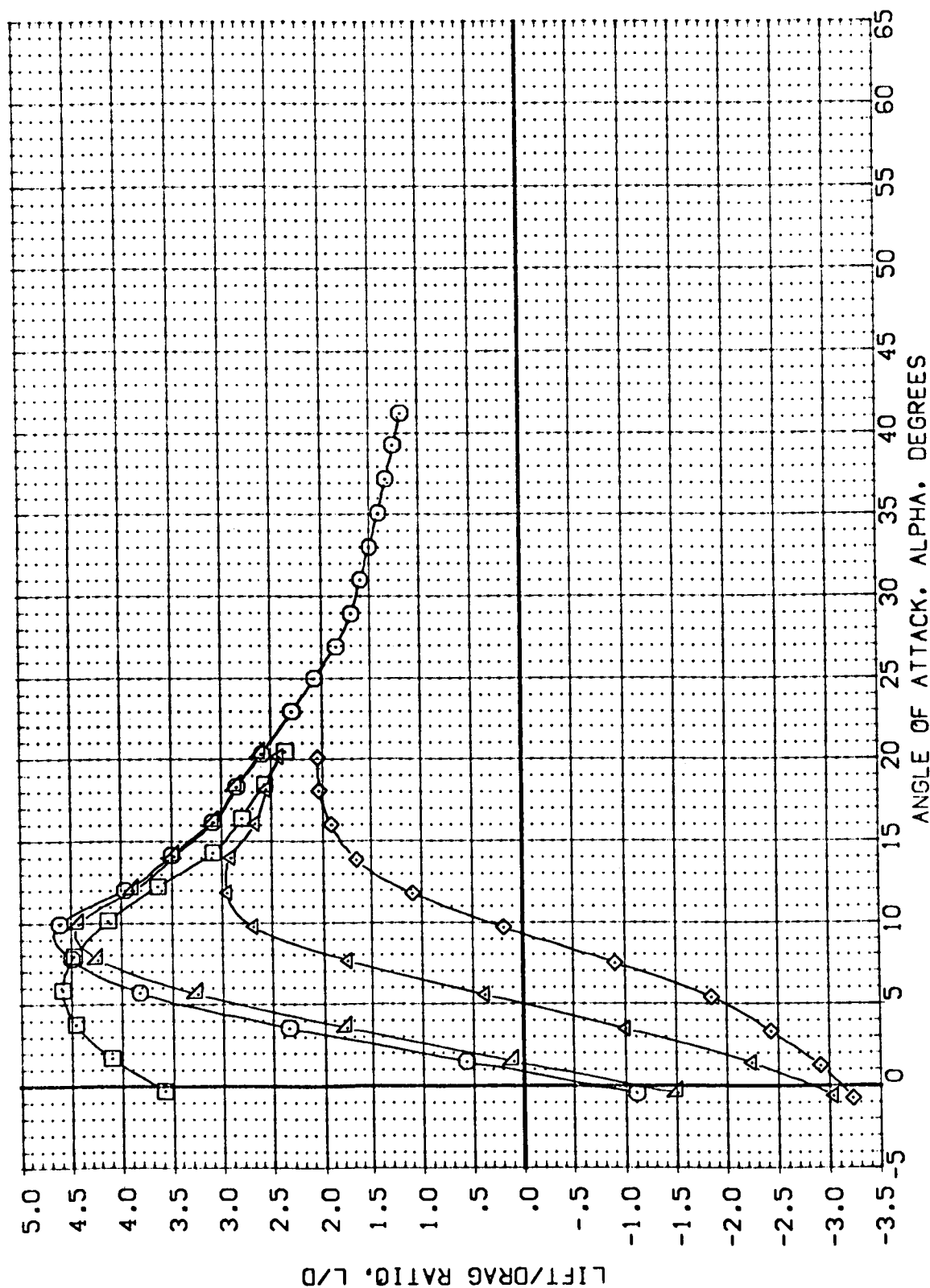


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOGRK BOFLAP REFERENCE INFORMATION SC.F.T.

{F87C08} MSEC 574(CA48) CR3 1398 .000 .000 999.990 .000 SREF 2690.0000 10000

{F87C15} MSEC 574(CA48) CR3 1398 .000 15.000 999.990 -3.750 LREF 474.8000 10000

{F87C21} MSEC 574(CA48) CR3 1398 .000 -40.000 999.990 -4.750 BREF 936.7000 10000

{F87C18} MSEC 574(CA48) CR3 1398 .000 -20.000 999.990 -1.250 XVRP 838.7000 10000

{F87C24} MSEC 574(CA48) CR3 1398 .000 -20.000 999.990 -1.250 ZVRP 838.7000 10000

{F87S98} DATA NOT AVAILABLE

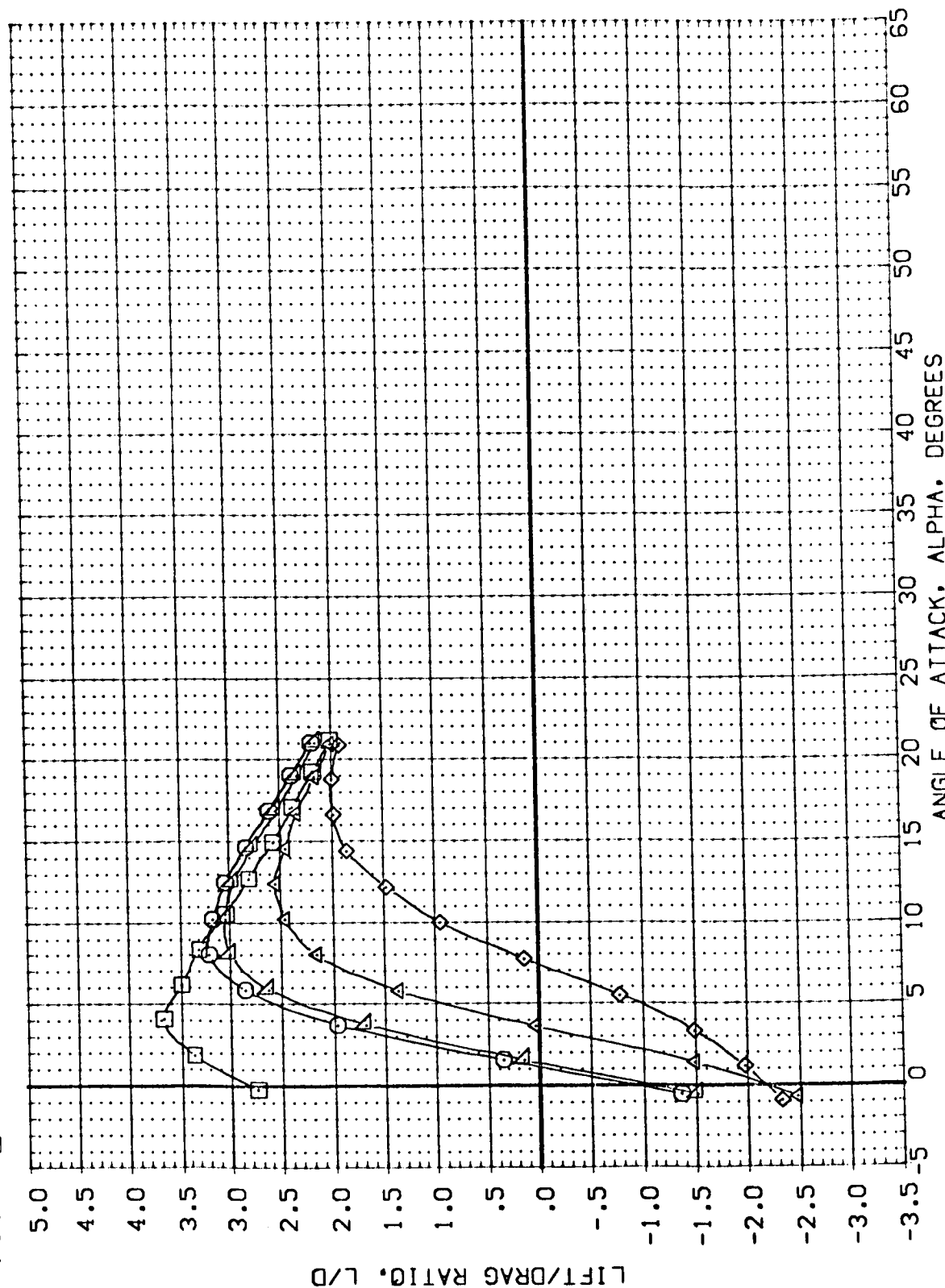


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 938.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XV2P 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	YV2P .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZV2P .0000
					SCALE	.0000

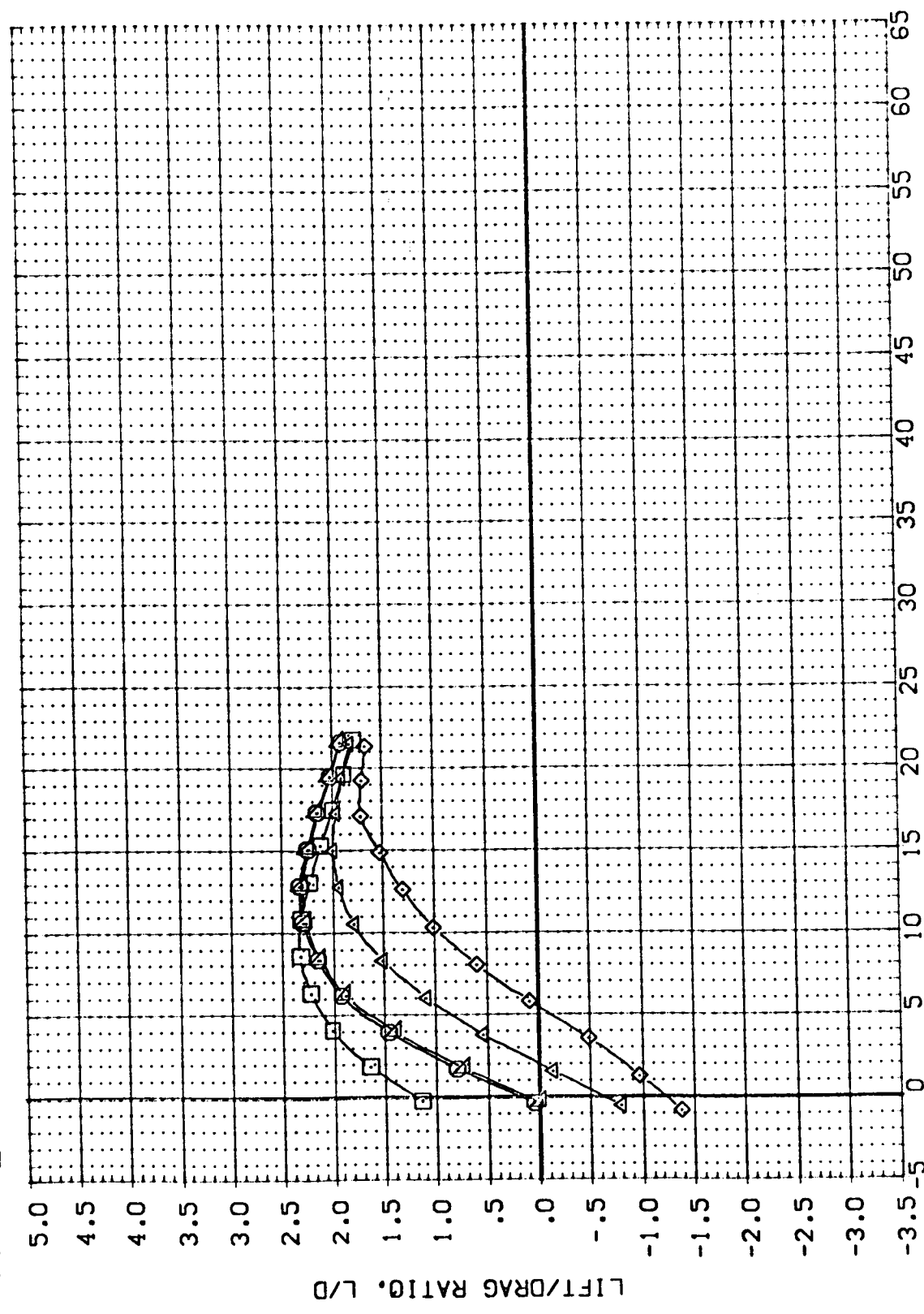


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08) MSFC 574(CA48) CR3 1398

(F87C15) MSFC 574(CA48) CR3 1393

(F87C21) MSFC 574(CA48) CR3 1393

(F87C28) MSFC 574(CA48) CR3 1393

(F87C24) MSFC 574(CA48) CR3 1393

(F87S08) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP

000 000 999.990 000

000 15.000 999.990 13.750

000 40.000 999.990 -14.250

000 -20.000 999.990 -14.250

000 000 999.990 -14.250

000 -20.000 999.990 -14.250

SCALE

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP 0000

ZMRP 0000

CC40

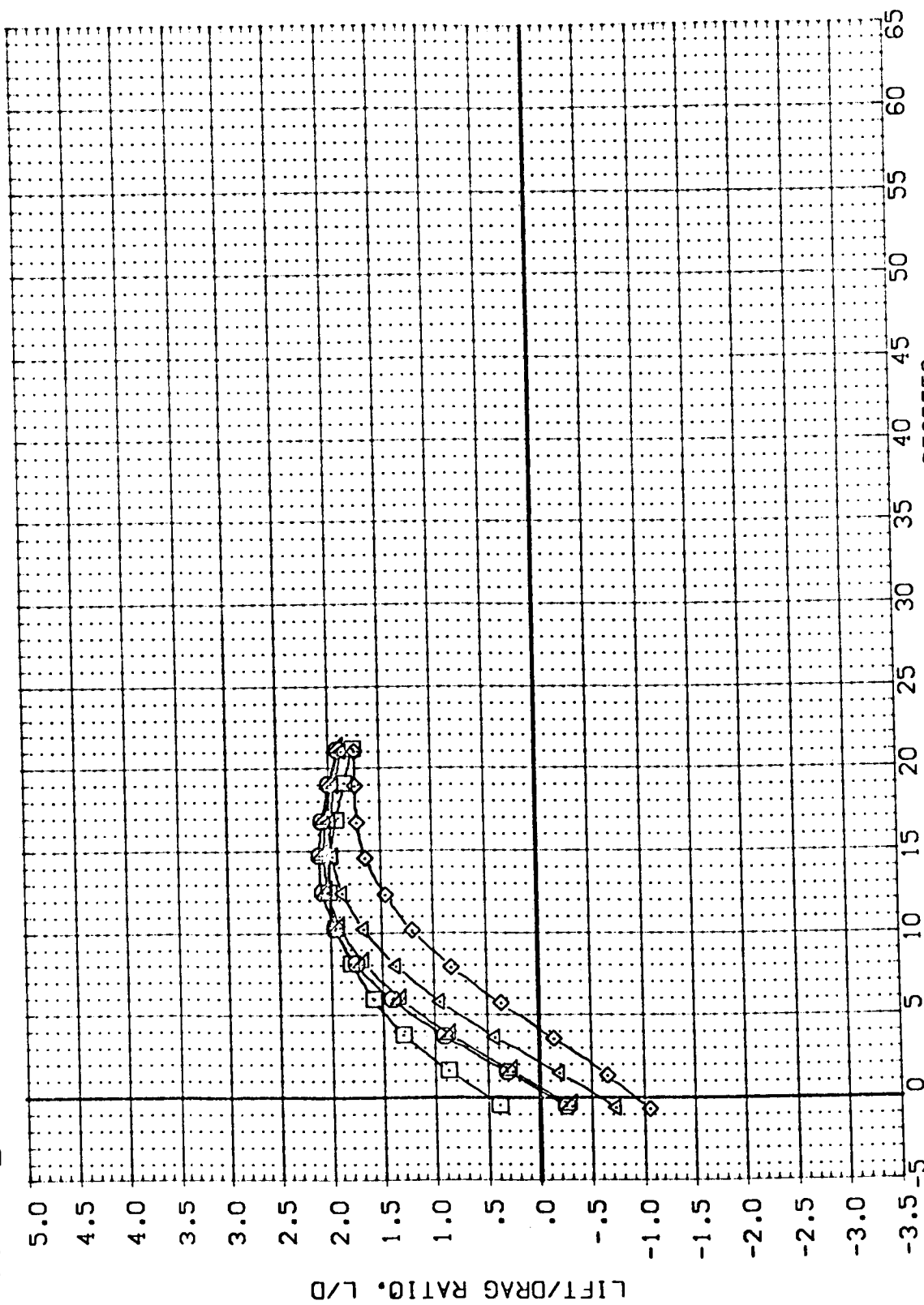


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C05)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	XMRP .0000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	YMRP .0000
(F87C36)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	-14.250	ZMRP .0000
	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	SCALE .0000

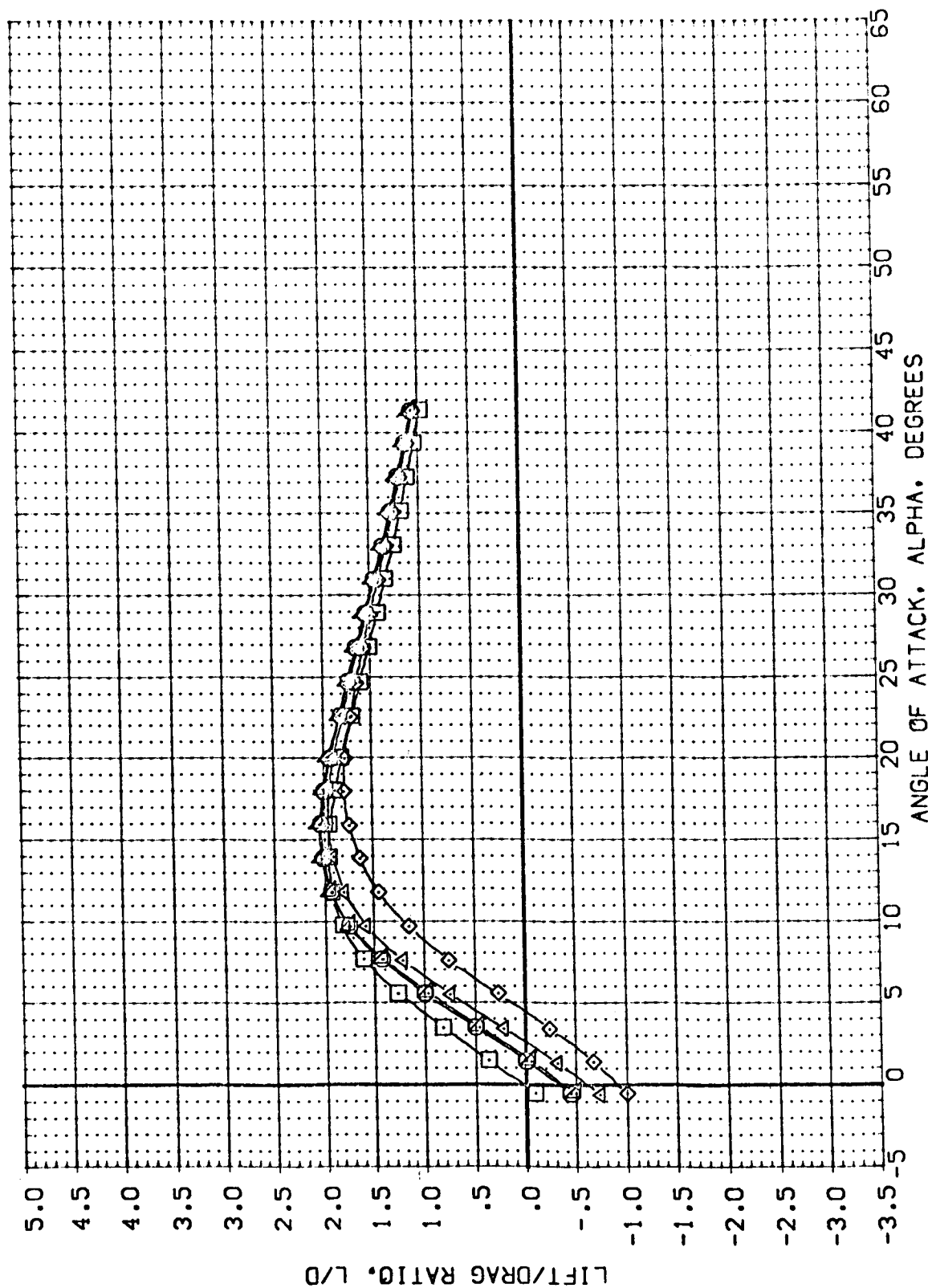


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOCLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(OA48) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000 SQ.F.
(F87C15)	MSFC 574(OA48) CRB 1393	.000	15.000	999.990	.000	UREF 474.8000 N.
(F87C21)	MSFC 574(OA48) CRB 1393	.000	-40.000	999.990	13.750	BREF 936.7000
(F87C18)	MSFC 574(OA48) CRB 1393	.000	-20.000	999.990	-14.250	XVRP 838.7000
(F87C24)	MSFC 574(OA48) CRB 1393	.000	.000	999.990	.000	VRP .0000
(F87S98)	MSFC 574(OA48) CRB 1393	.000	-20.000	999.990	-14.250	ZVRP .0000
						SCALE .0040

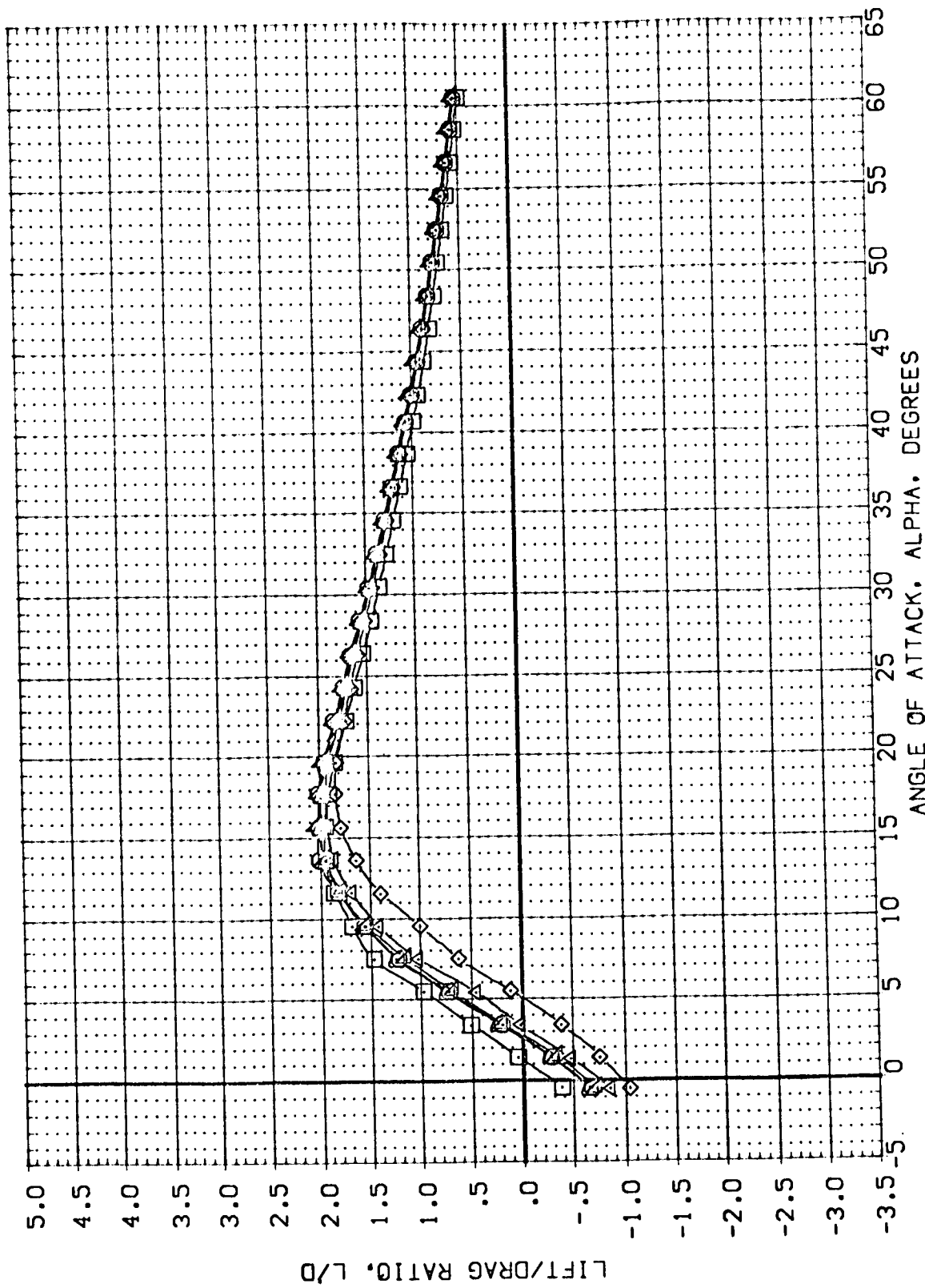


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPOBRK	BOFLAP	REFERENCE INFORMATION	SCALE
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690	.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474	.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936	.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838	.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	-14.250	YMRP	.0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP	.0000
						SCALE	.0040

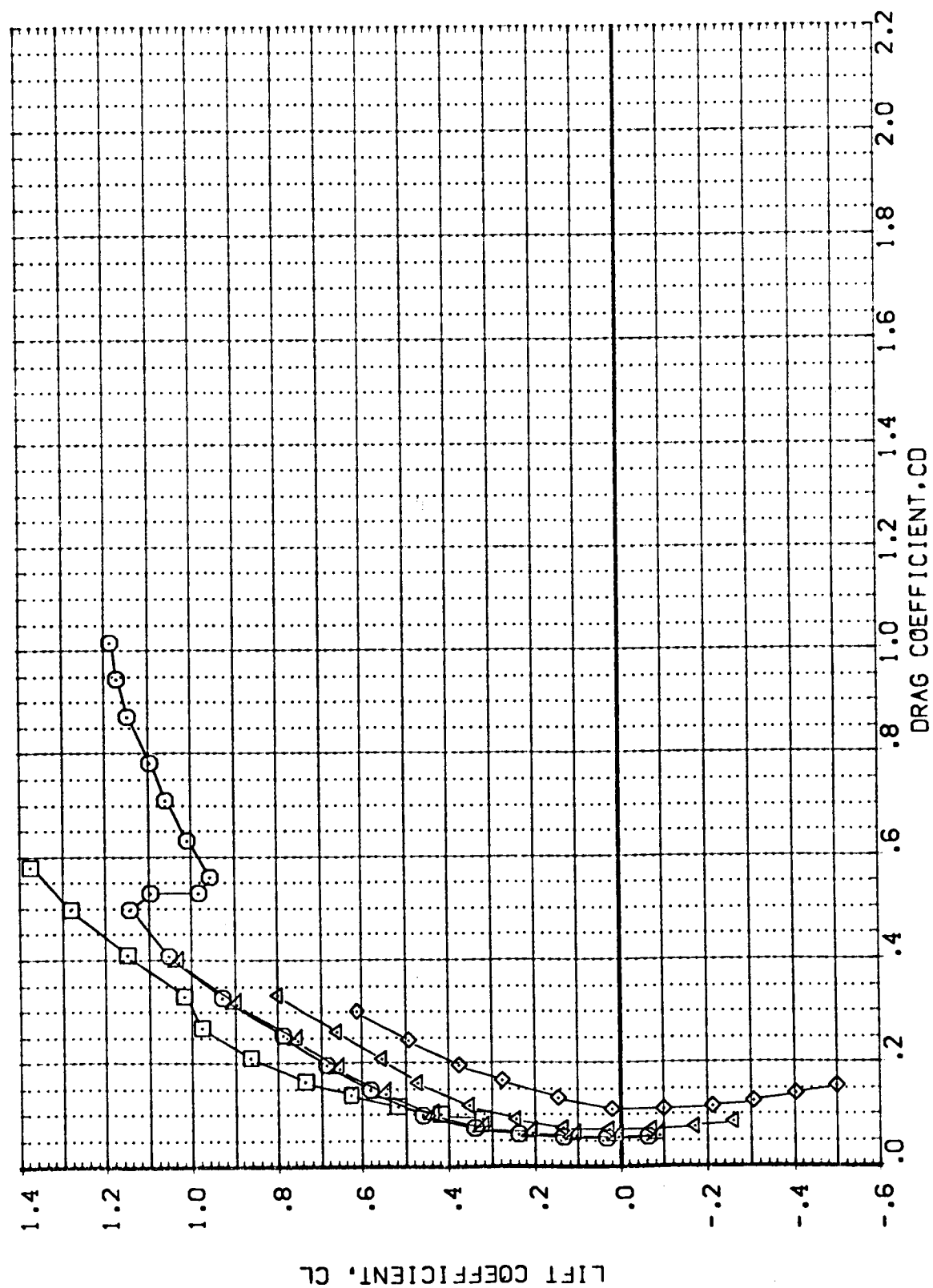


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

CAJ MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574 (CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574 (CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574 (CA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574 (CA48) CRB 1398	.000	-20.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	SC.FT.

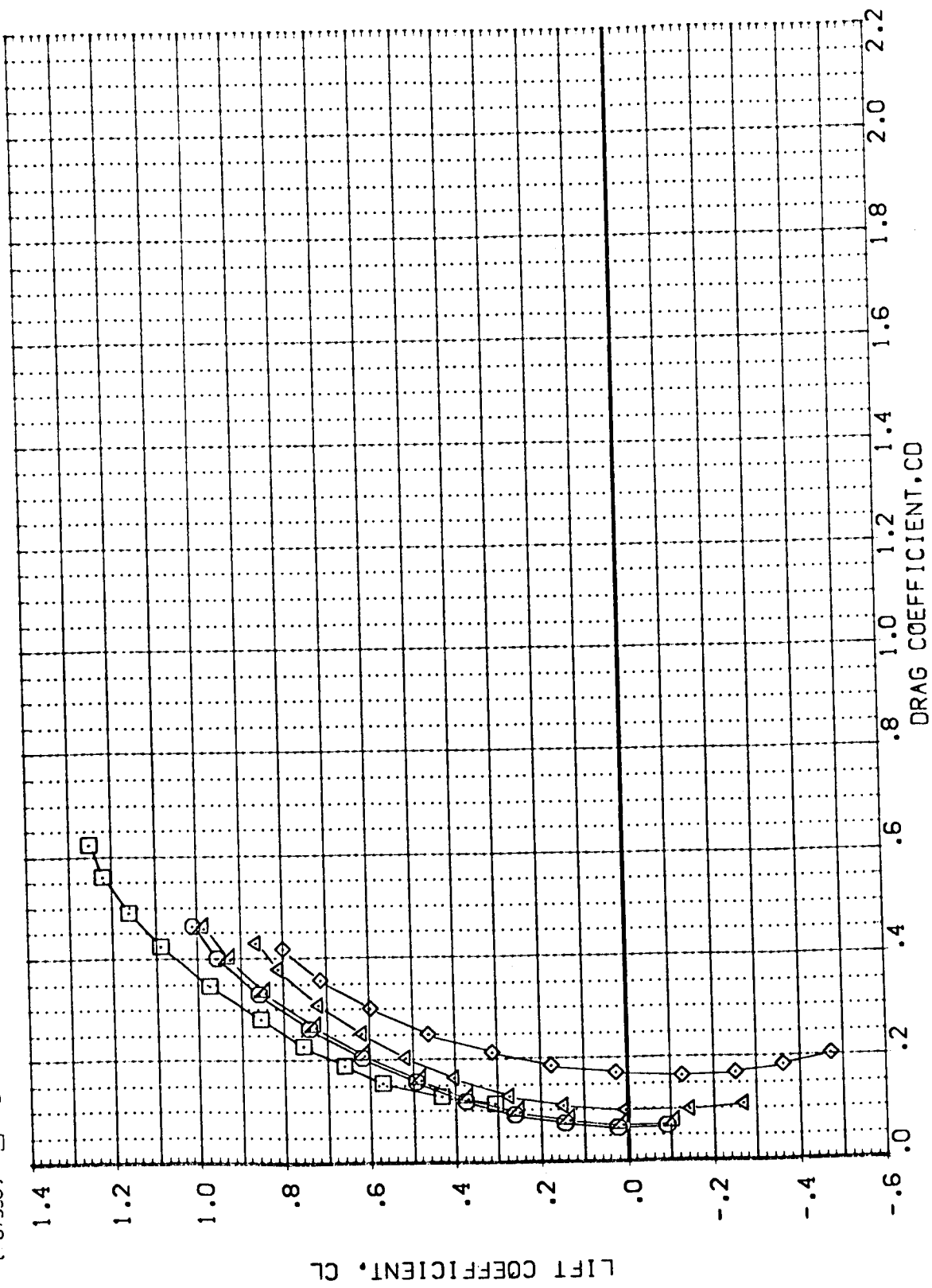


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) ORB 139B	.000	15.000	999.990	-14.250	BREF 836.7000
(F87C18)	MSFC 574(CA48) ORB 139B	.000	-40.000	999.990	.000	XREF 838.7000
(F87C24)	MSFC 574(CA48) ORB 139B	.000	-20.000	999.990	.000	VREF .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZREF .0000
						SCALE .0010

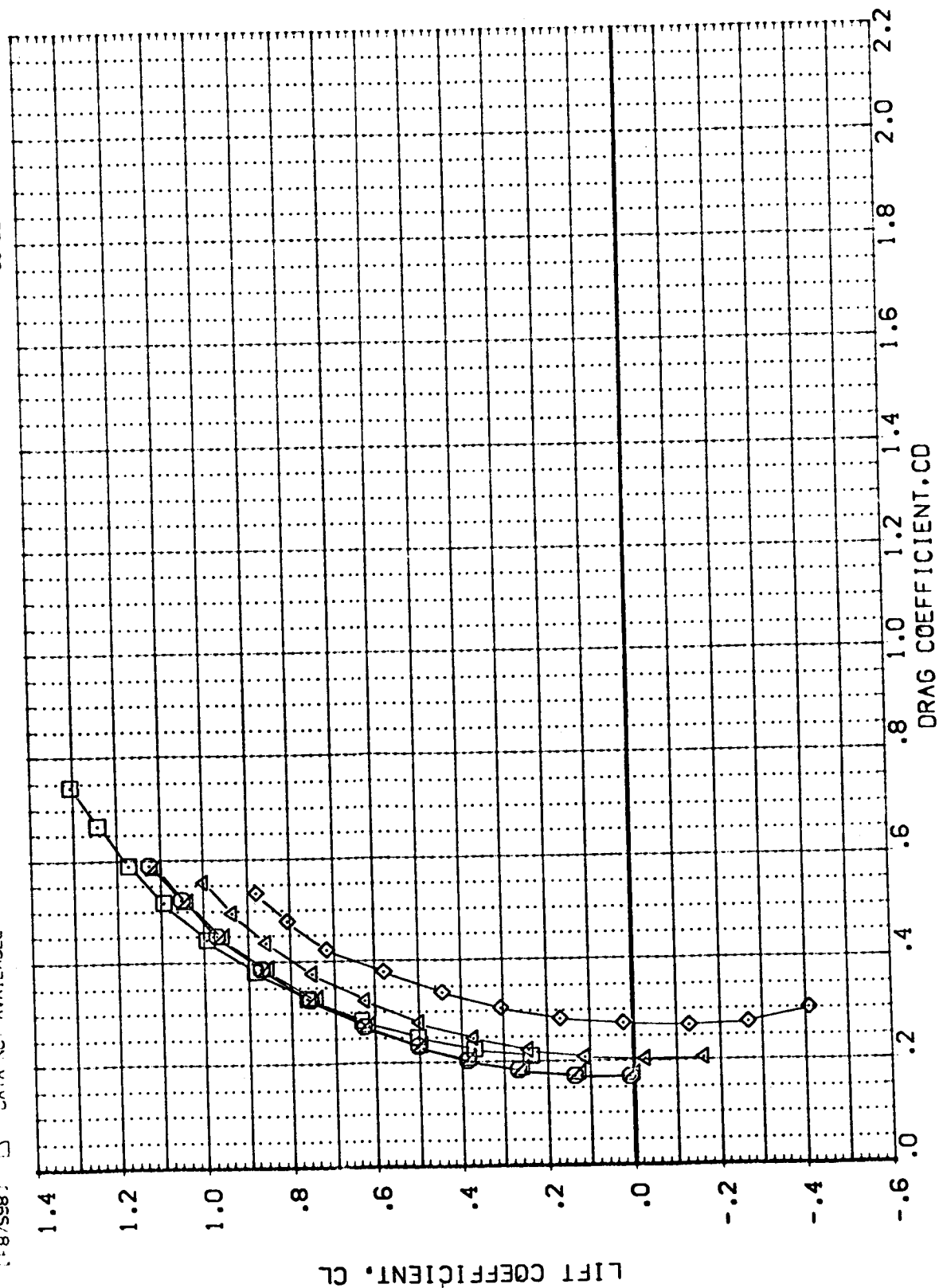


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYNO.	CONFIGURATION	DESCRIPTION
(F87C08)	574 (CA48)	CRB (393)
(F87C15)	574 (CA48)	CRB (393)
(F87C22)	574 (CA48)	CRB (393)
(F87C29)	574 (CA48)	CRB (393)
(F87C36)	574 (CA48)	CRB (393)
(F87C43)	DATA NOT AVAILABLE	

BETA	ELEVTR	SPOBKR	BOFLAP	REFERENCE INFORMATION	SO.F.T.
.000	.000	.000	.00	SREF	2690.0000
.000	.000	.000	.00	REF	478.8000
.000	15.000	.000	13.00	REF	936.7000
.000	-40.000	.000	-14.00	XPB	838.7000
.000	-20.000	.000	-14.00	XPB	.0000
.000	.000	.000	.00	SCALE	.0000
.00	-20.000	.000	-14.00	SCALE	.0000

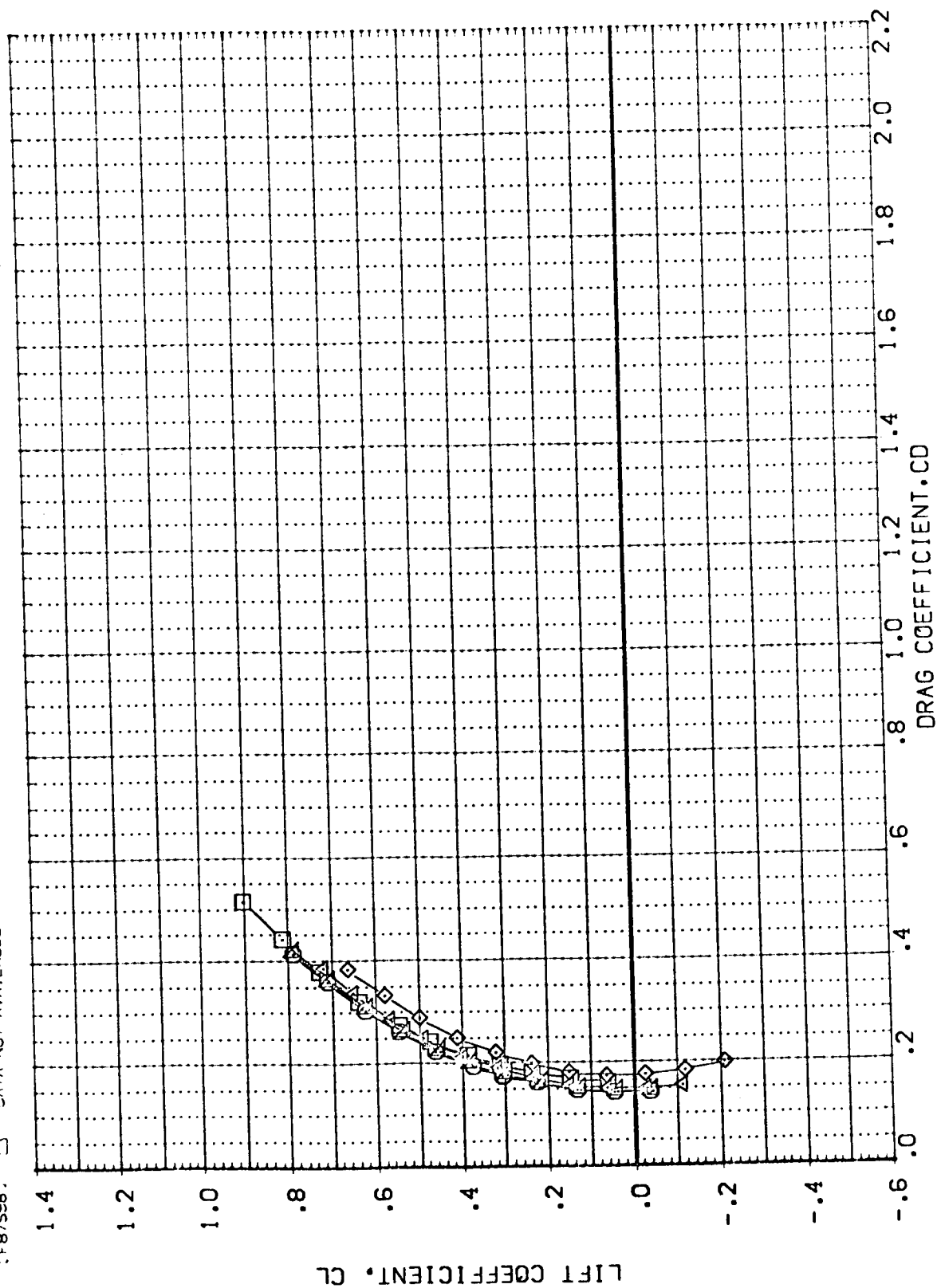


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

CONTACT 11 1.055

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOELAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-10.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XVREF 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	-14.250	YVREF .0000
(F87C98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVREF .0000
					SCALE	.0040

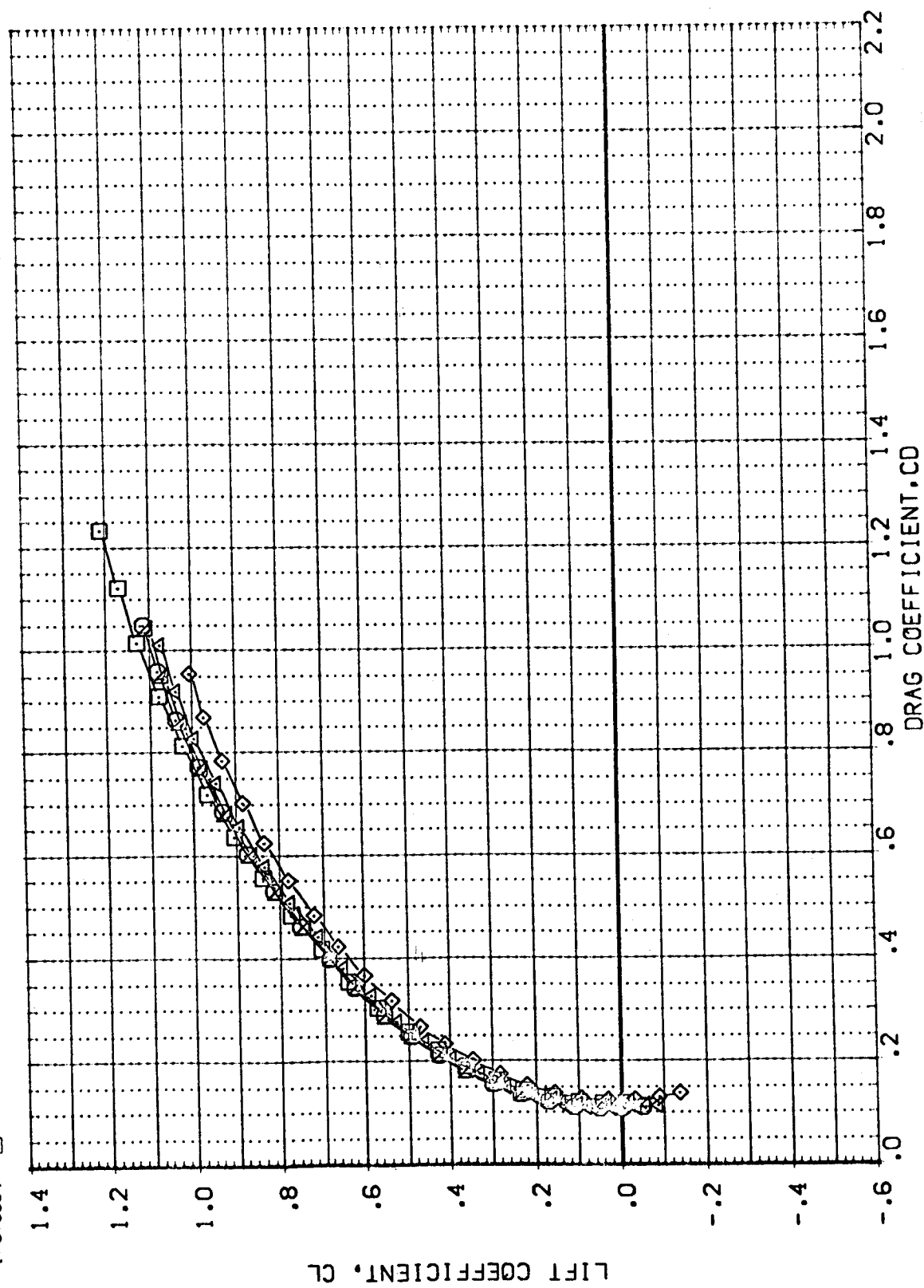


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574 (CA48) CR3 139B	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87C15)	MSFC 574 (CA48) CR3 139B	.000	.000	999.999	13.750	LREF 474.8000
(F87C21)	MSFC 574 (CA48) CR3 139B	.000	15.000	999.999	-14.250	BREF 936.7000
(F87C18)	MSFC 574 (CA48) CR3 139B	.000	-40.000	999.999	.000	XMRP 838.7000
(F87C24)	MSFC 574 (CA48) CR3 139B	.000	-20.000	999.999	.000	YMRP .0000
(F87C24)	MSFC 574 (CA48) CR3 139B	.000	-20.000	999.999	-14.250	ZMRP .0000
(F87C24)	MSFC 574 (CA48) CR3 139B	.000	-20.000	999.999	-14.250	SCALE .0040

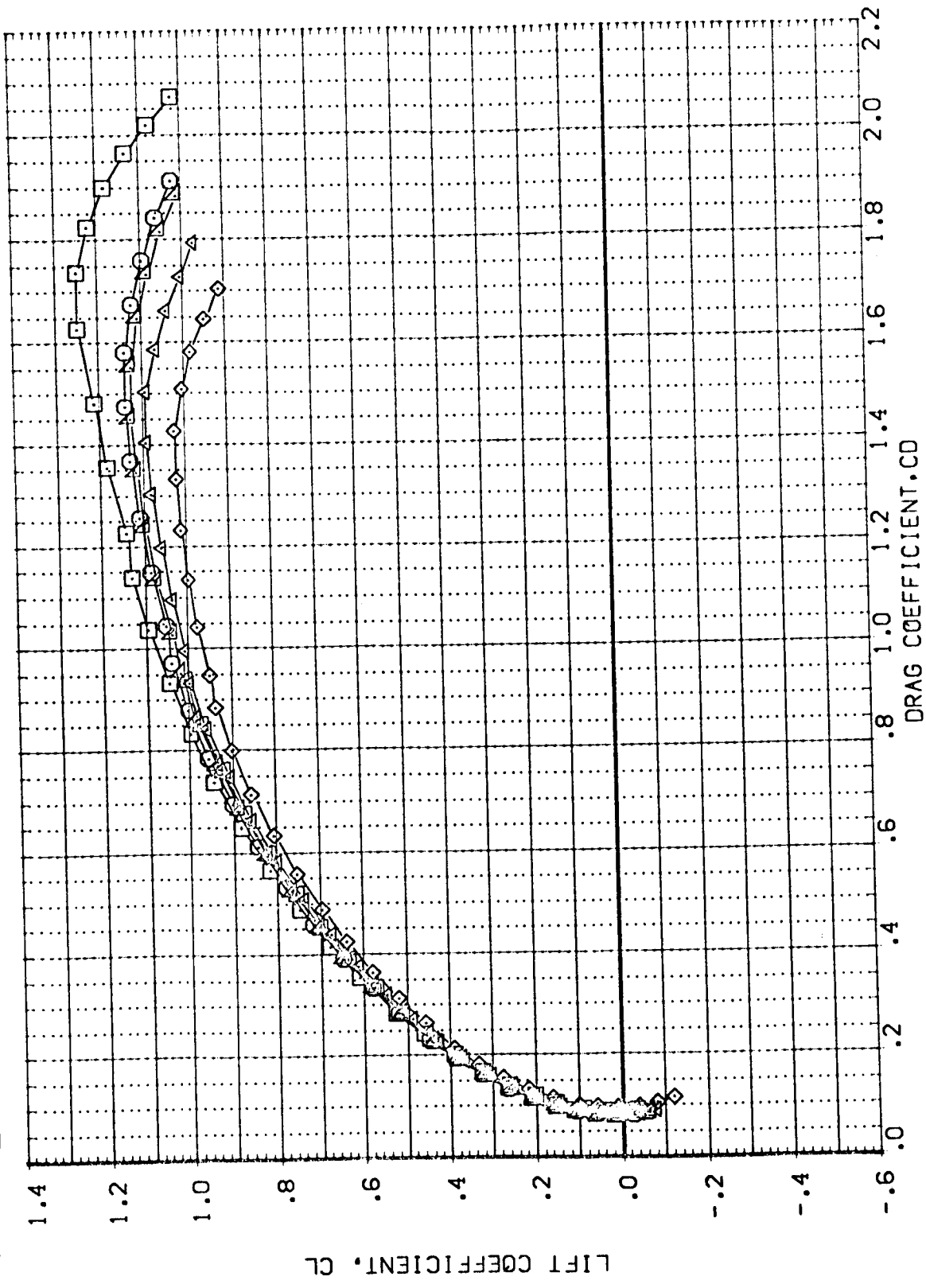


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87C08)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690 SC.F.T.
(G87C15)	MSFC 574(CA48) CRB 1398	.000	15.000	999.990	.000	LREF 474 SC.F.T.
(G87C21)	MSFC 574(CA48) CRB 1399	.000	-45.000	999.990	13.750	BREF 936 SC.F.T.
(G87C18)	MSFC 574(CA48) CRB 1399	.000	-20.000	999.990	.000	XWRP 864 SC.F.T.
(G87C24)	MSFC 574(CA48) CRB 1399	.000	-20.000	999.990	.000	YWRP SC.F.T.
(G87S58)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZWRP SC.F.T.
					SCALE	

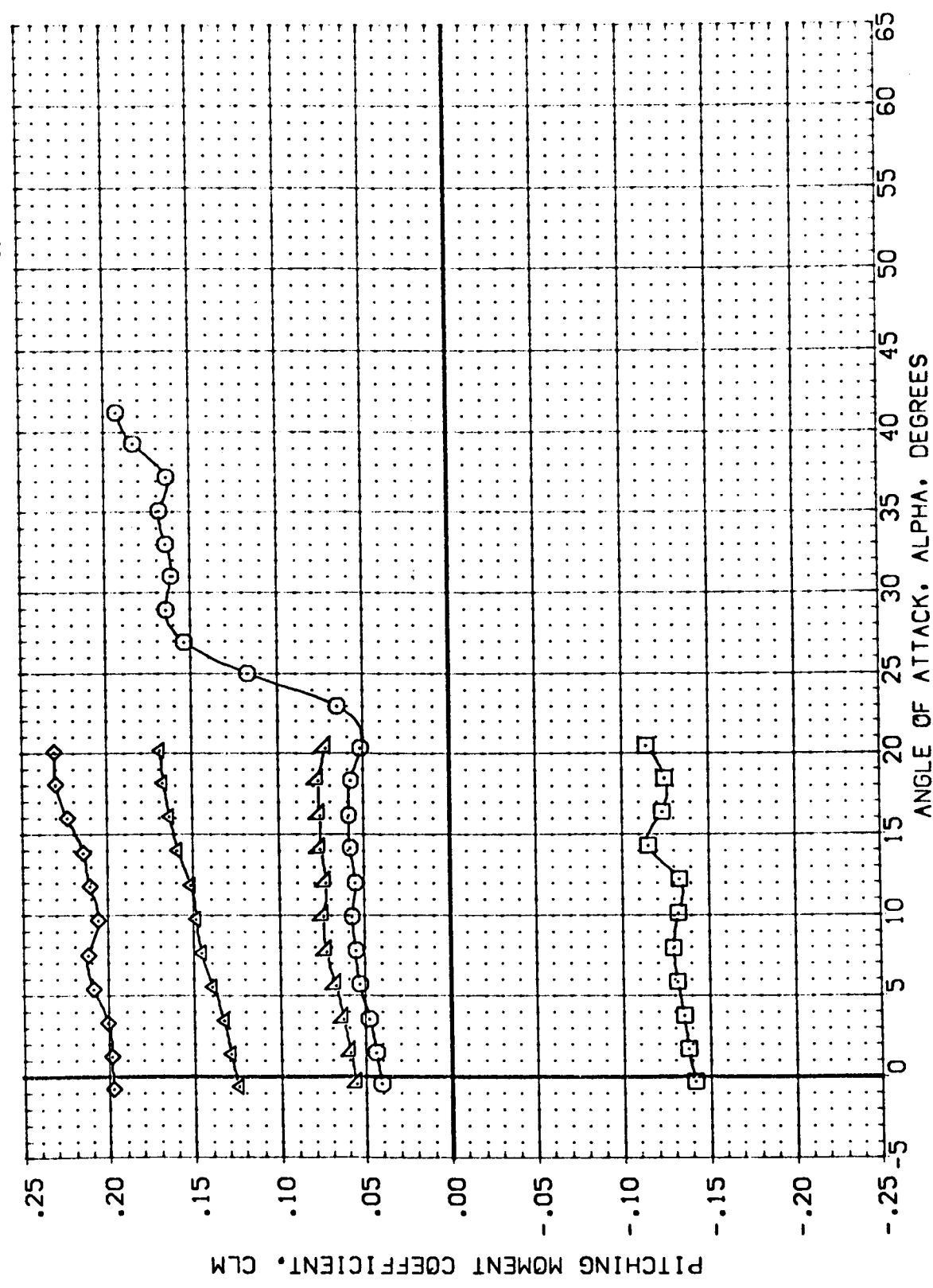


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87C08)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(G87C15)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	13.750	LREF 474.8000
(G87C21)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	-14.250	BREF 936.7000
(G87C18)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	XMRP 864.5000
(G87C24)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	-14.250	YMRP .0000
(G87C38)	DATA NOT AVAILABLE	.000	.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

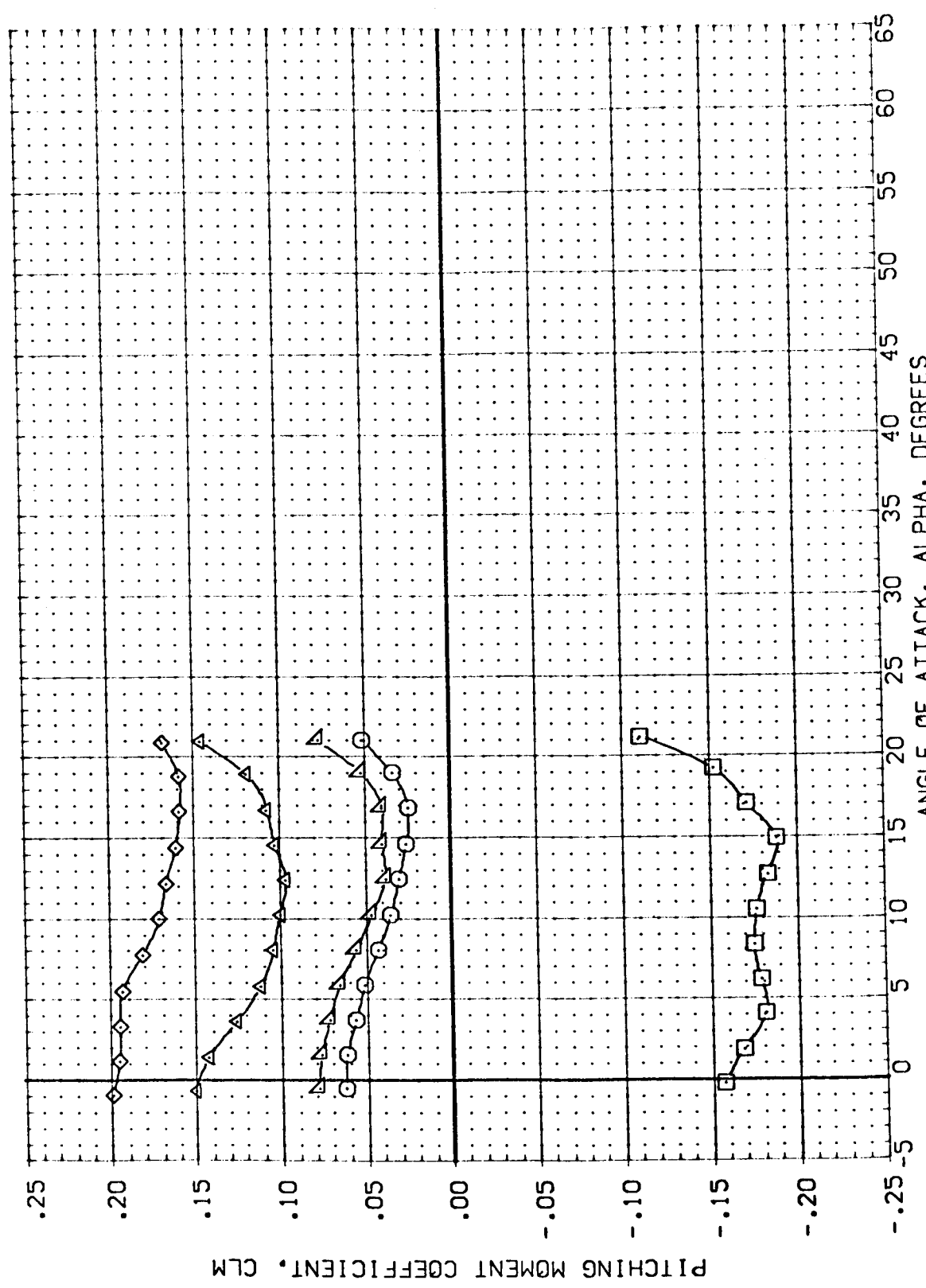


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBO:	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPORRK	BOF LAP	REFERENCE INFORMATION
(G87C08)	MSFC 574(OA48) CRB 1393	.000	.000	999.999	.000	SREF 2690.0000 SQ.FT.
(G87C15)	MSFC 574(OA48) CRB 1393	.000	15.000	999.999	13.750	REF 474.8000
(G87C21)	MSFC 574(OA48) CRB 1393	.000	-40.000	999.999	-14.250	BREF 936.7000
(G87C18)	MSFC 574(OA48) CRB 1393	.000	-20.000	999.999	.000	XREF 864.5000
(G87C24)	MSFC 574(OA48) CRB 1393	.000	.000	999.999	-14.250	YREF .0000
(G87S98)	DATA NOT AVAILABLE	.000	-20.000	999.999	-14.250	ZREF .0000
					SCALE	.0040

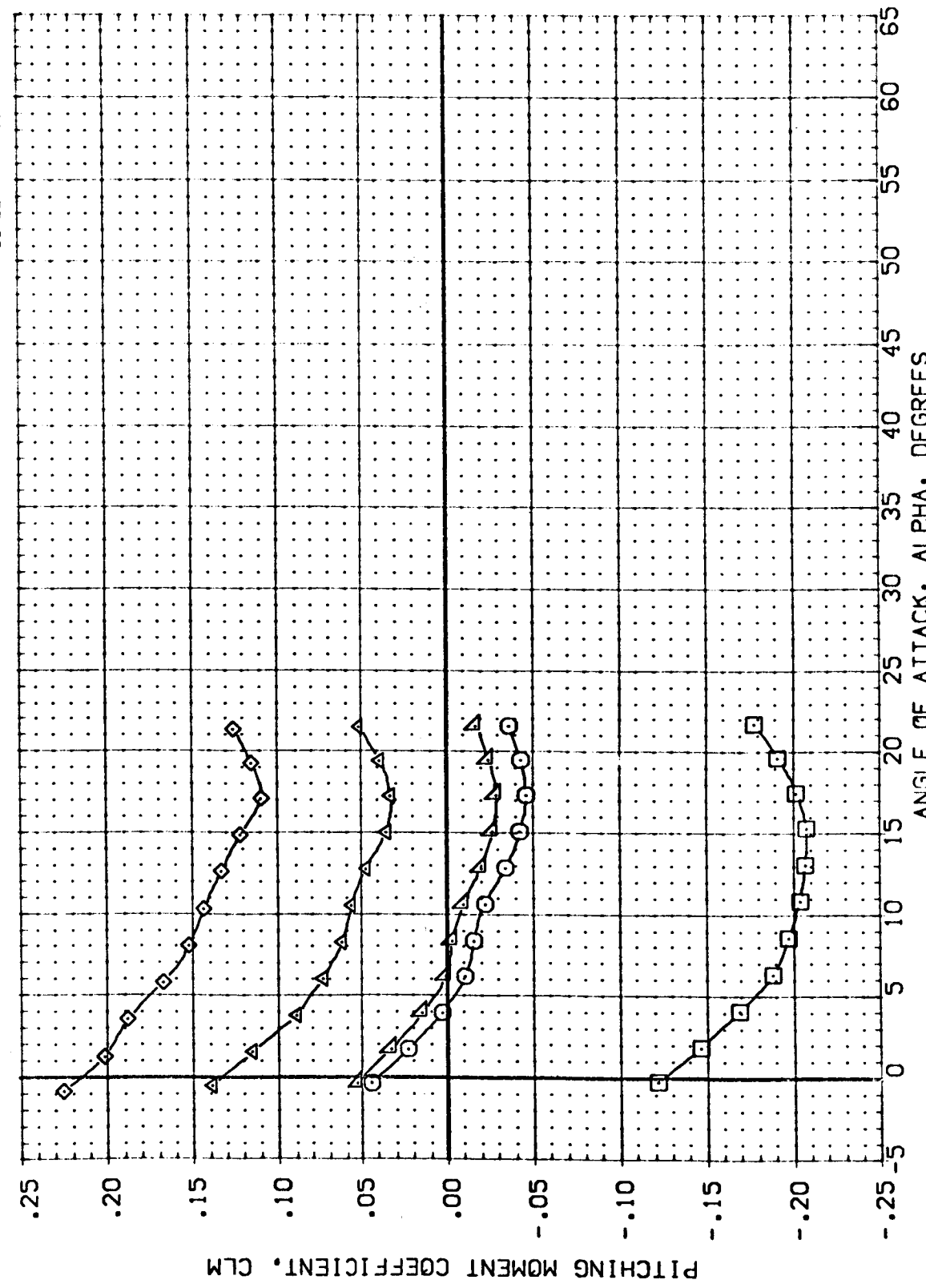


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(587C08)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	2690.0000 SO.F.T.
(587C09)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	474.8000
(587C10)	MSFC 574(CA48) ORB 139B	.000	15.000	999.990	13.750	936.7000
(587C11)	MSFC 574(CA48) ORB 139B	.000	-40.000	999.990	-14.250	864.5000
(587C18)	MSFC 574(CA48) ORB 139B	.000	-20.000	999.990	.000	.0000
(587C24)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	-14.250	.0000
(587S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	.0000

SCALE .0040

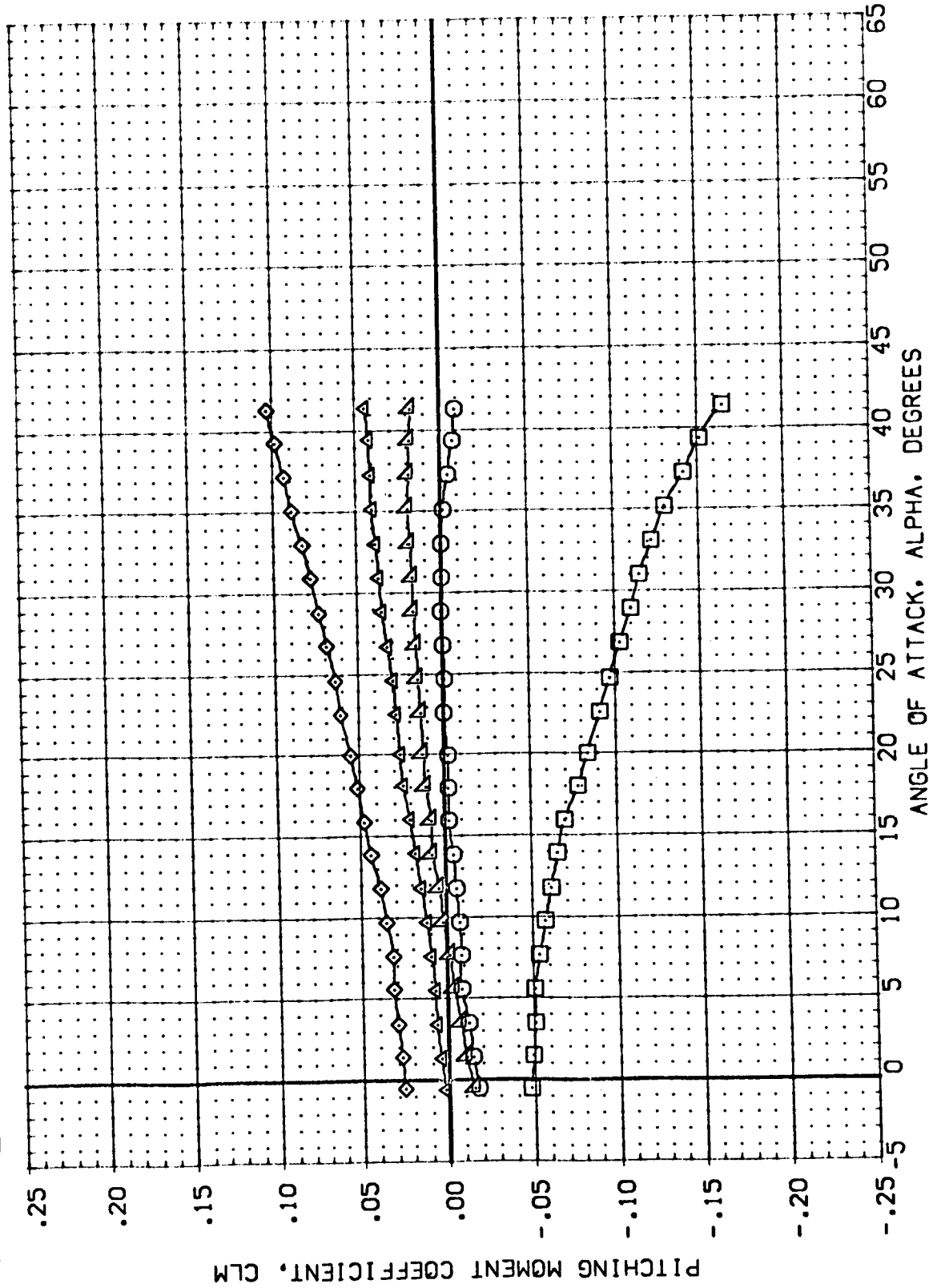


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(C87C08)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(C87C15)	MSFC 574 (CA48) CRB 399	.000	15.000	999.990	3.750	LREF 474.8000
(C87C21)	MSFC 574 (CA48) CRB 399	.000	-40.000	999.990	-4.250	BREF 936.7000
(C87C18)	MSFC 574 (CA48) CRB 399	.000	-20.000	999.990	.000	XMRP 864.5000
(C87C24)	MSFC 574 (CA48) CRB 399	.000	-20.000	999.990	-4.250	YMRP .0000
(C87C24)	MSFC 574 (CA48) CRB 399	.000	-20.000	999.990	-4.250	ZMRP .0000
(C87C24)	MSFC 574 (CA48) CRB 399	.000	-20.000	999.990	-4.250	SCALE .0040

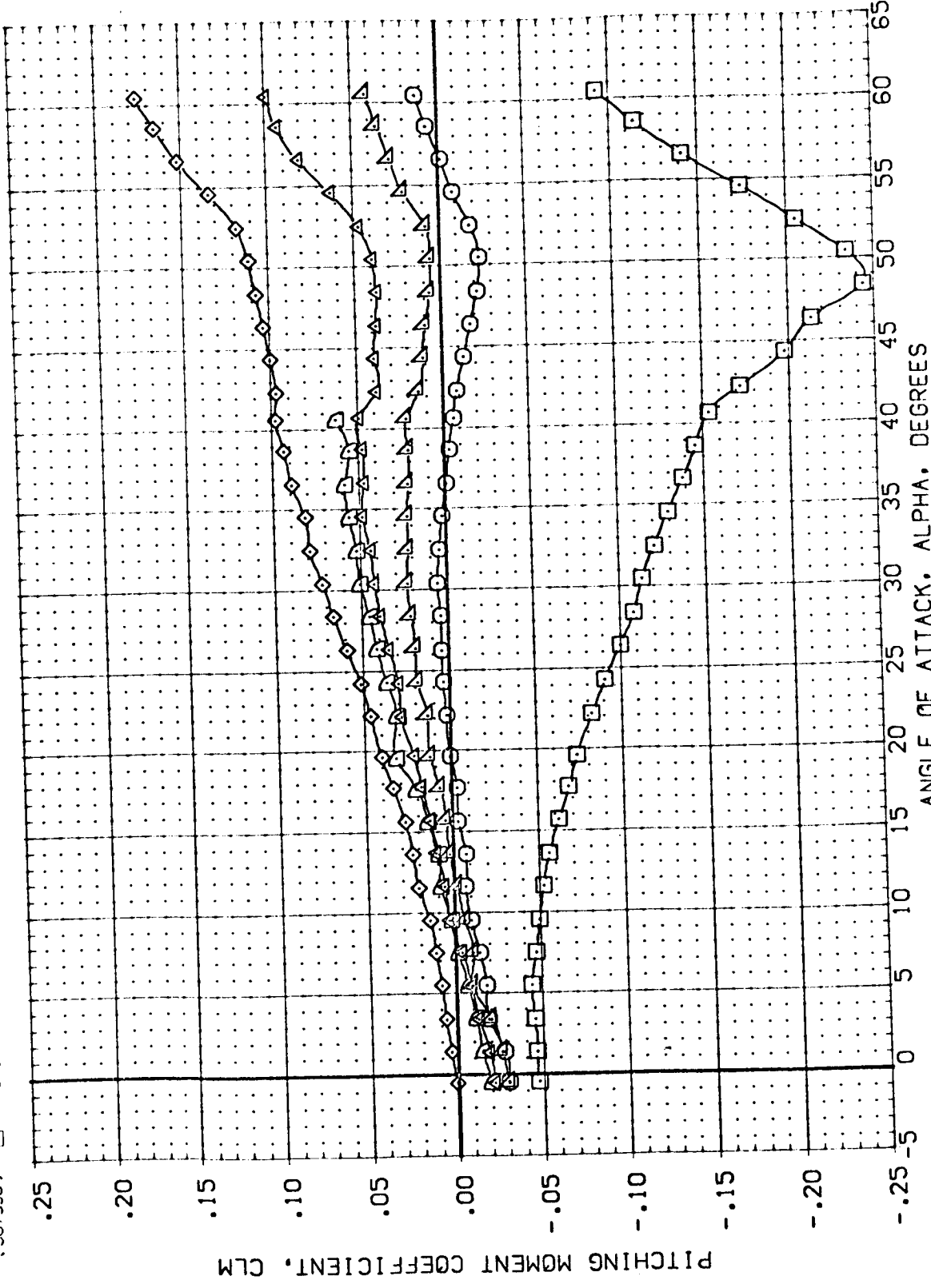


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 (AFT C.G.)

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	15.000	999.990	.000	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-40.000	999.990	13.750	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-20.000	999.990	-14.250	XMRP 839.7000
(F87S44)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

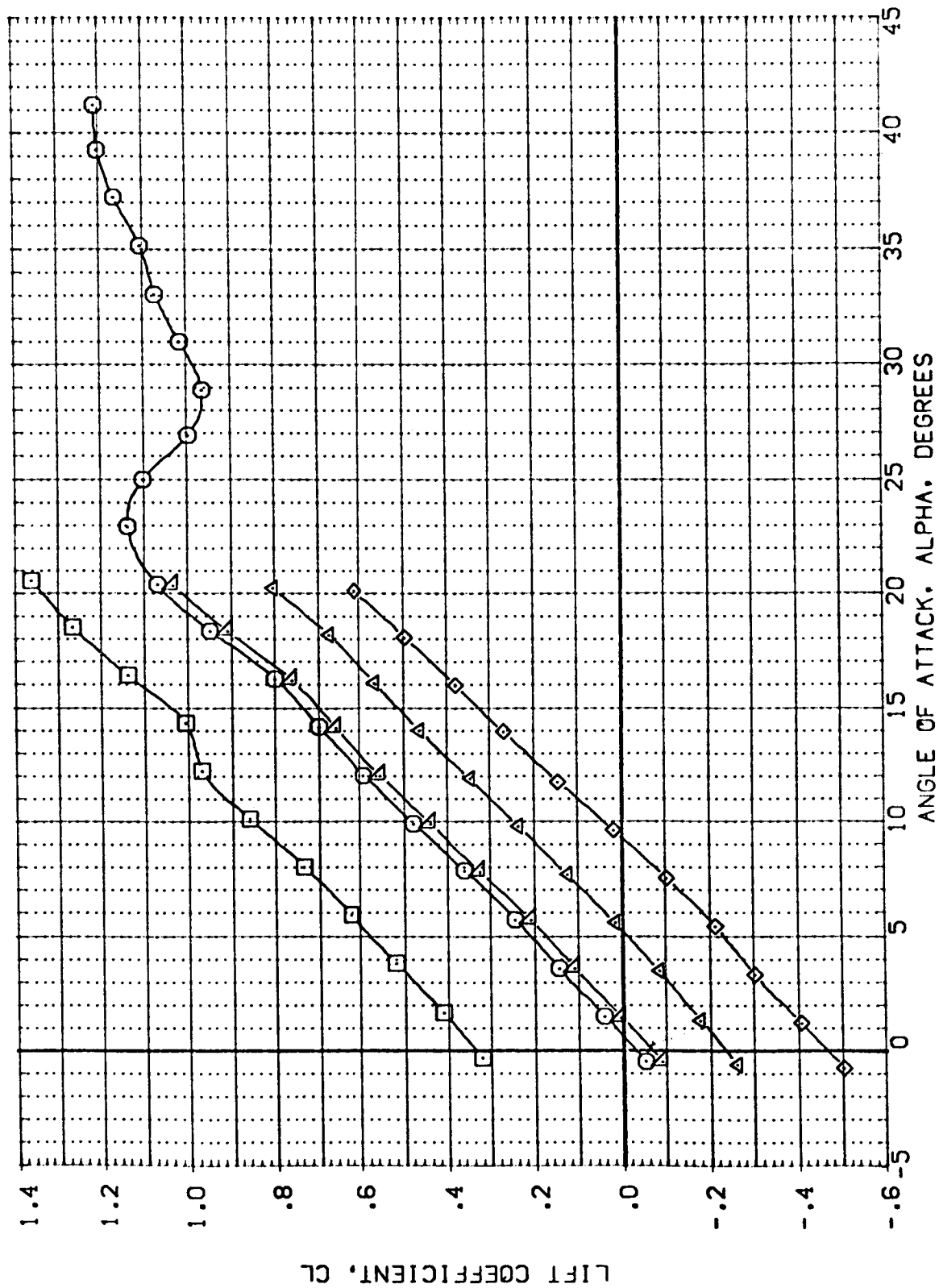


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (A) VACH = .6;

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F87S31)	WS-C 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	WS-C 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	13.750	OREF 474.8000
(F87S42)	WS-C 574(CA48) CR3 139B W/ALT NOSE	.000	.15.000	999.990	-14.250	BREF 936.5000
(F87S40)	WS-C 574(CA48) CR3 139B W/ALT NOSE	.000	-40.000	999.990	.000	XMRP 838.0000
(F87S44)	WS-C 574(CA48) CR3 139B W/ALT NOSE	.000	-20.000	999.990	-14.250	YMRP .0000
					ZMRP .0000	SCALE .0040

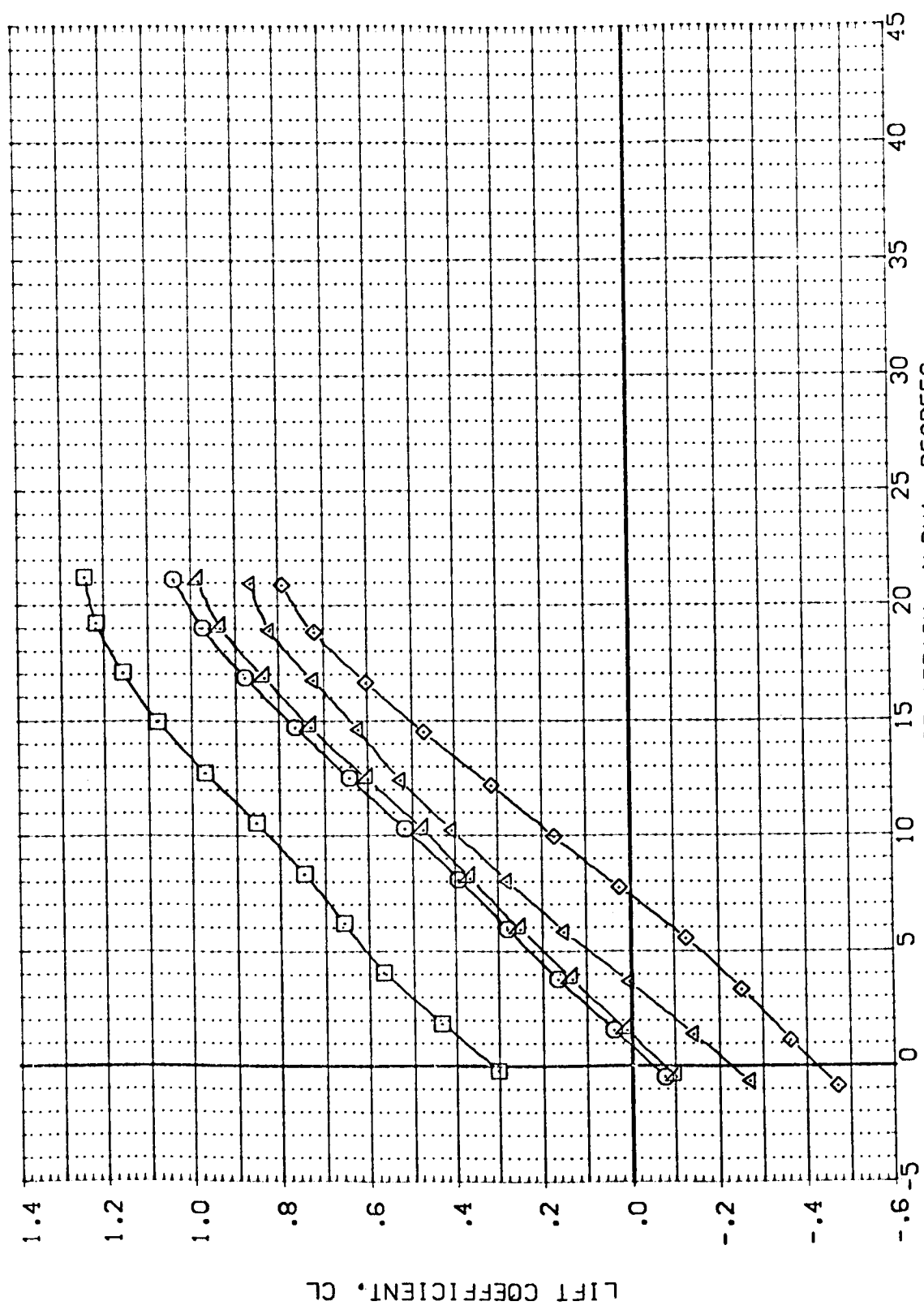


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B) VACH = .90
 PAGE 658

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	W57C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	W57C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87S42)	W57C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	13.750	BREF 936.7000
(F87S40)	W57C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	XREF 838.7000
(F87S44)	W57C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	YREF .0000
						ZREF .0000
						SCALE .0040

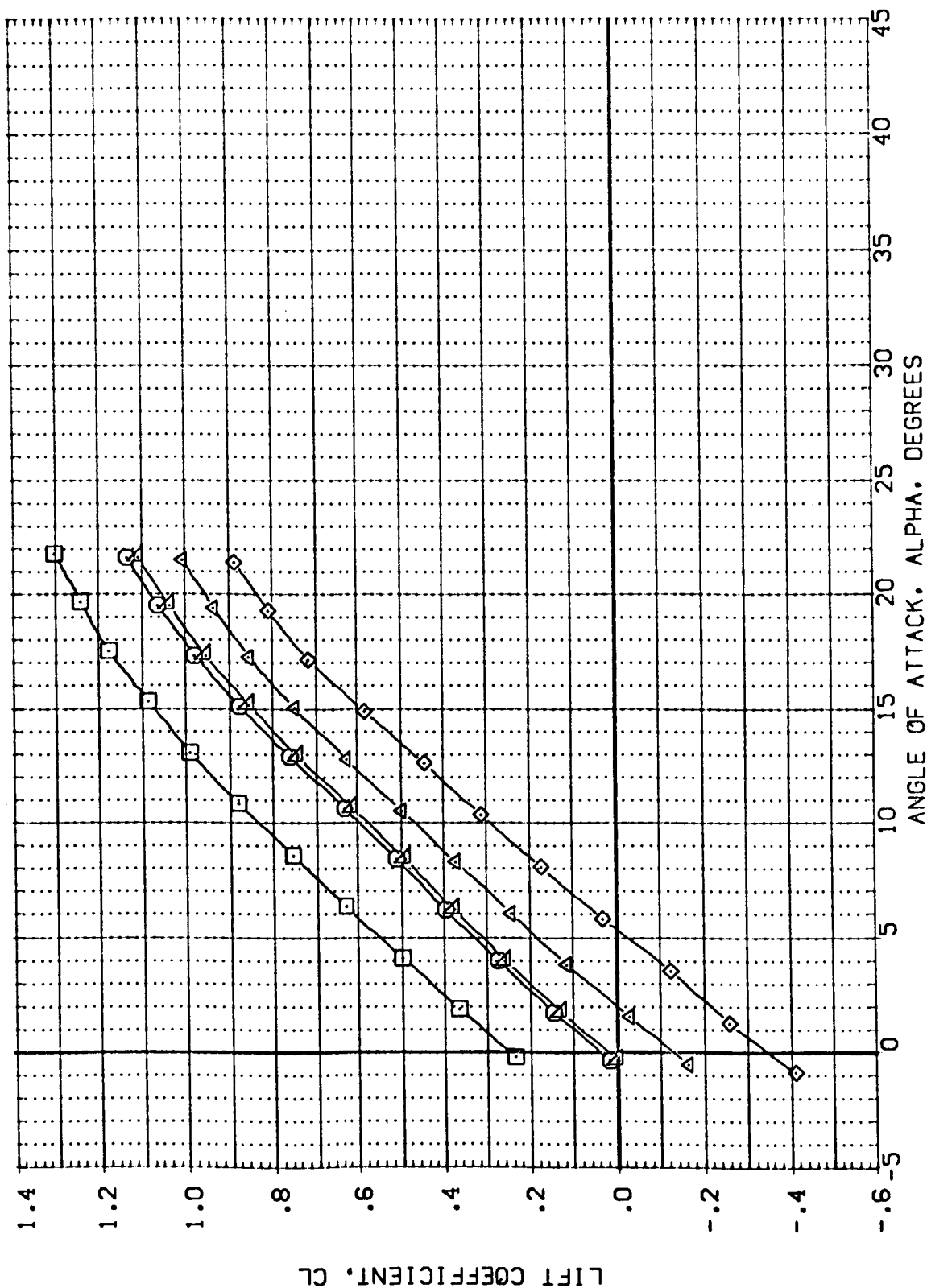


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 1393 W/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CRB 1393 W/ALT NOSE	.000	.000	999.999	.000	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 1393 W/ALT NOSE	.000	.000	999.999	.000	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 1393 W/ALT NOSE	.000	.000	999.999	.000	XVRP 838.7000
(F87S44)	MSFC 574(CA48) CRB 1393 W/ALT NOSE	.000	.000	999.999	.000	YVRP .0000
						ZVRP .0000
						SCALE .0040

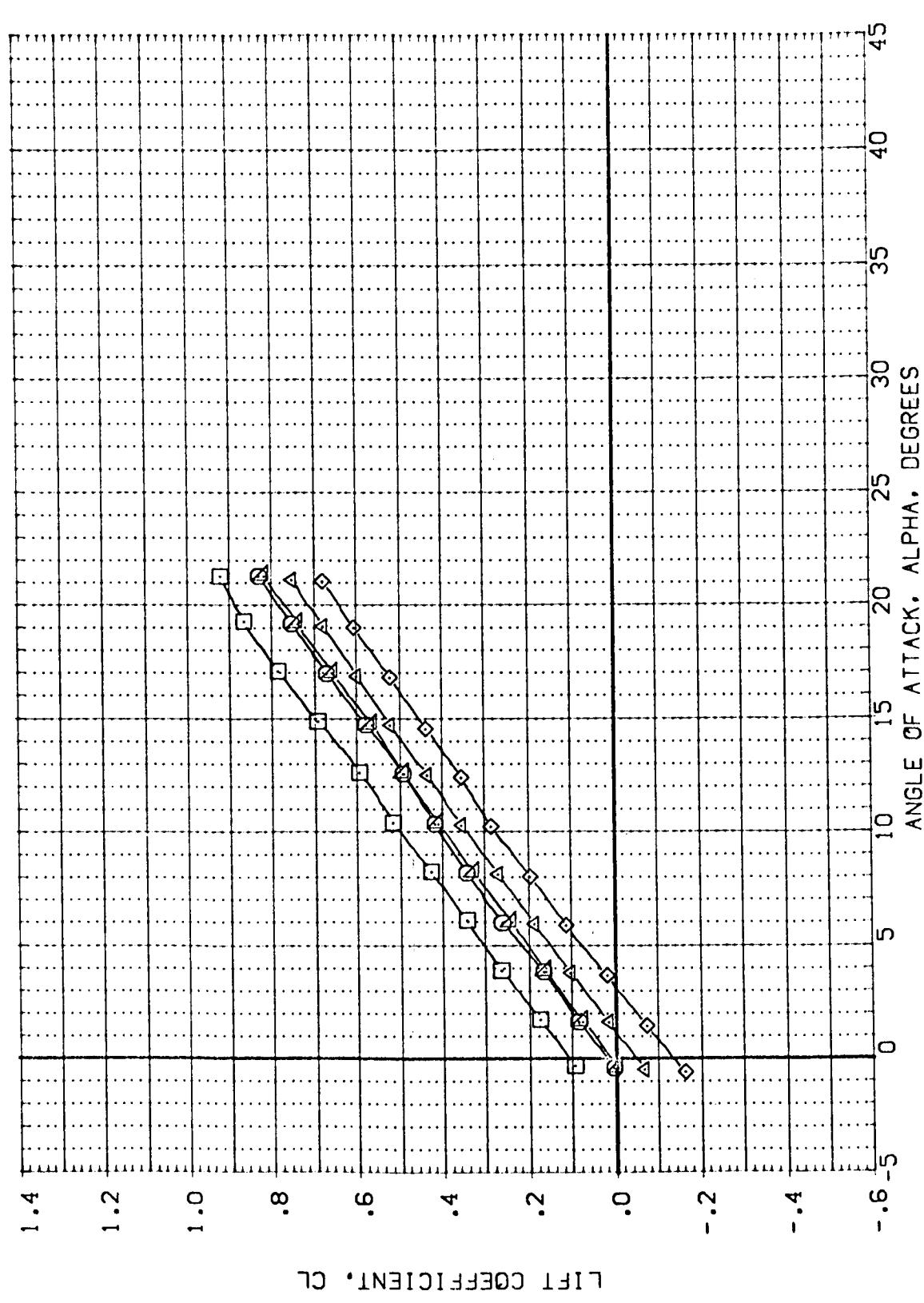


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48)	ORB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S38)	MSFC 574(CA48)	ORB 1398 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48)	ORB 1398 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 536.7000
(F87S43)	MSFC 574(CA48)	ORB 1398 V/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
(F87S44)	MSFC 574(CA48)	ORB 1398 V/ALT NOSE	.000	.000	999.990	-14.250	YREF .0000
							ZREF .0000
							SCALE .0040

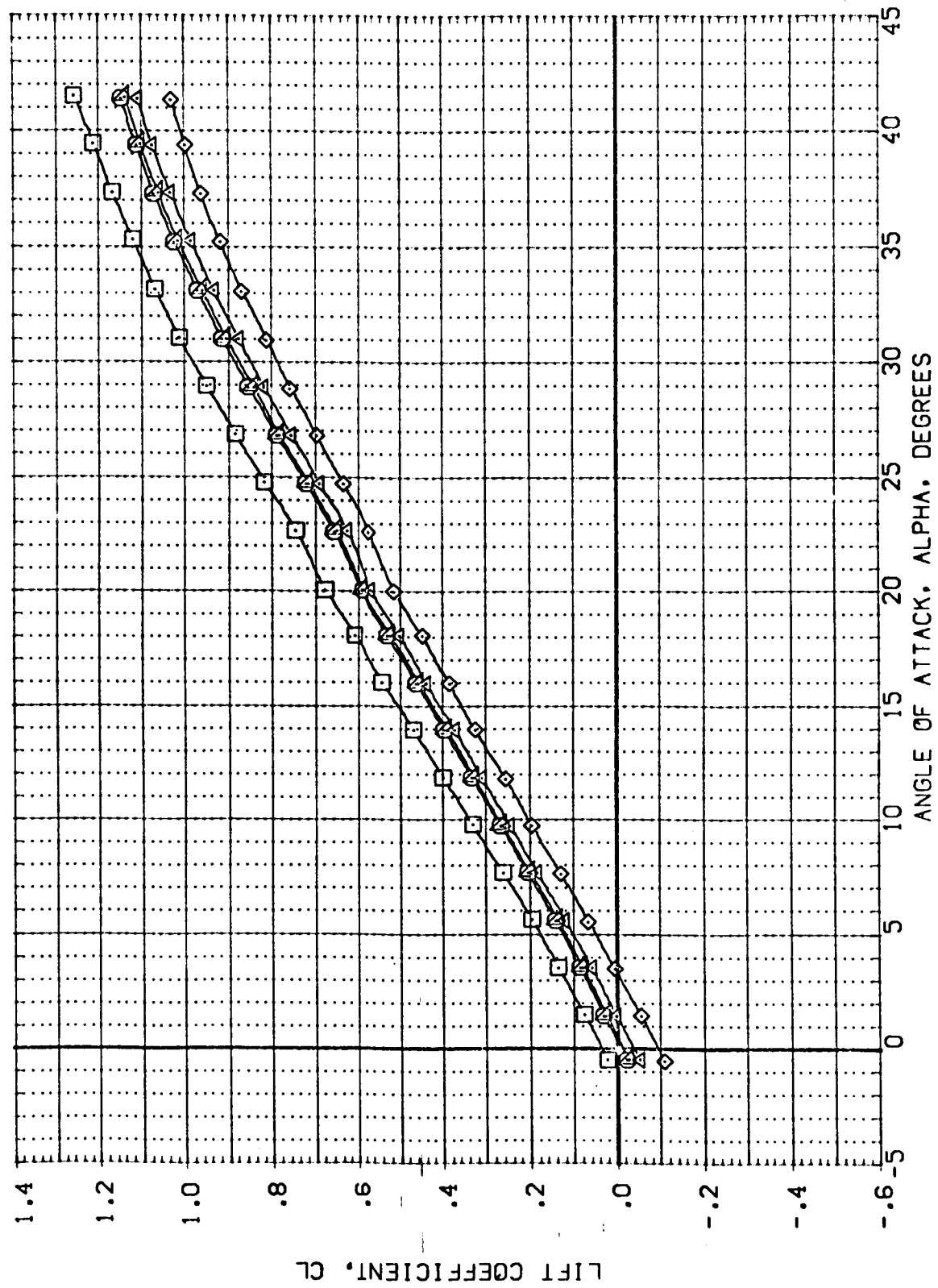


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDGRK	BCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 393 V/A/T NOISE	.000	.000	999.999	.000	SPCF 2690.0000 SC.F.
(F87538)	MSFC 574(CA48) CRB 393 V/A/T NOISE	.000	.000	999.999	.000	REF 474.8000
(F87542)	MSFC 574(CA48) CRB 393 V/A/T NOISE	.000	.000	999.999	13.7500	REF 936.7000
(F87540)	MSFC 574(CA48) CRB 393 V/A/T NOISE	.000	.000	999.999	-14.2500	REF 838.0000
(F87544)	MSFC 574(CA48) CRB 393 V/A/T NOISE	.000	.000	999.999	-14.2500	REF 0.0000
						SCALE 0.0000

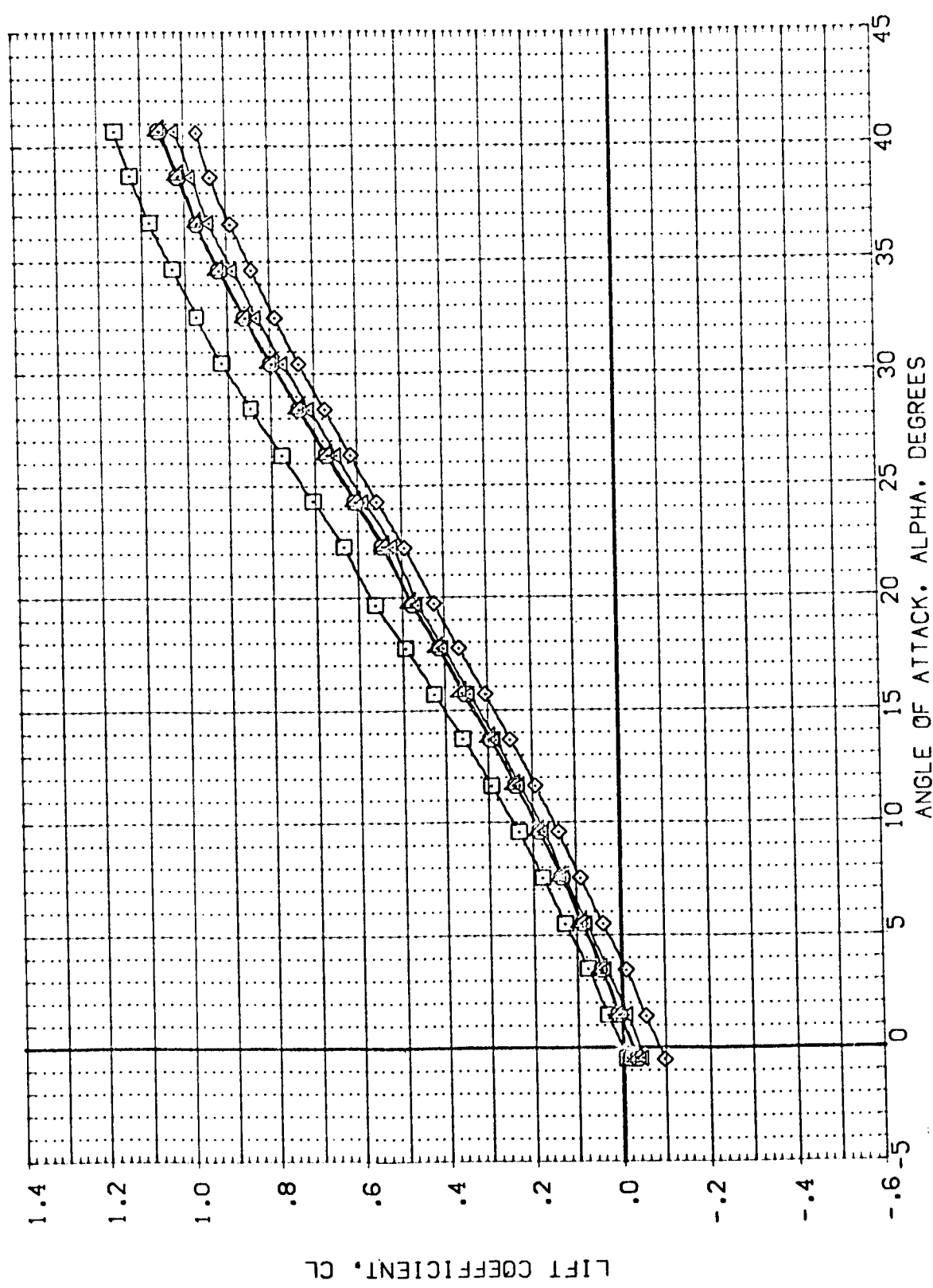


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (CFMACH = 4.96) PAGE 662

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSEC 574(CA48) CRB 139B V/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	MSEC 574(CA48) CRB 139B V/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSEC 574(CA48) CRB 139B V/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSEC 574(CA48) CRB 139B V/ALT NOISE	.000	-20.000	999.990	.000	XREF 938.7000
(F87S44)	MSEC 574(CA48) CRB 139B V/ALT NOISE	.000	.000	999.990	-14.250	YREF .0000
						ZREF .0000
						SCALE .0010

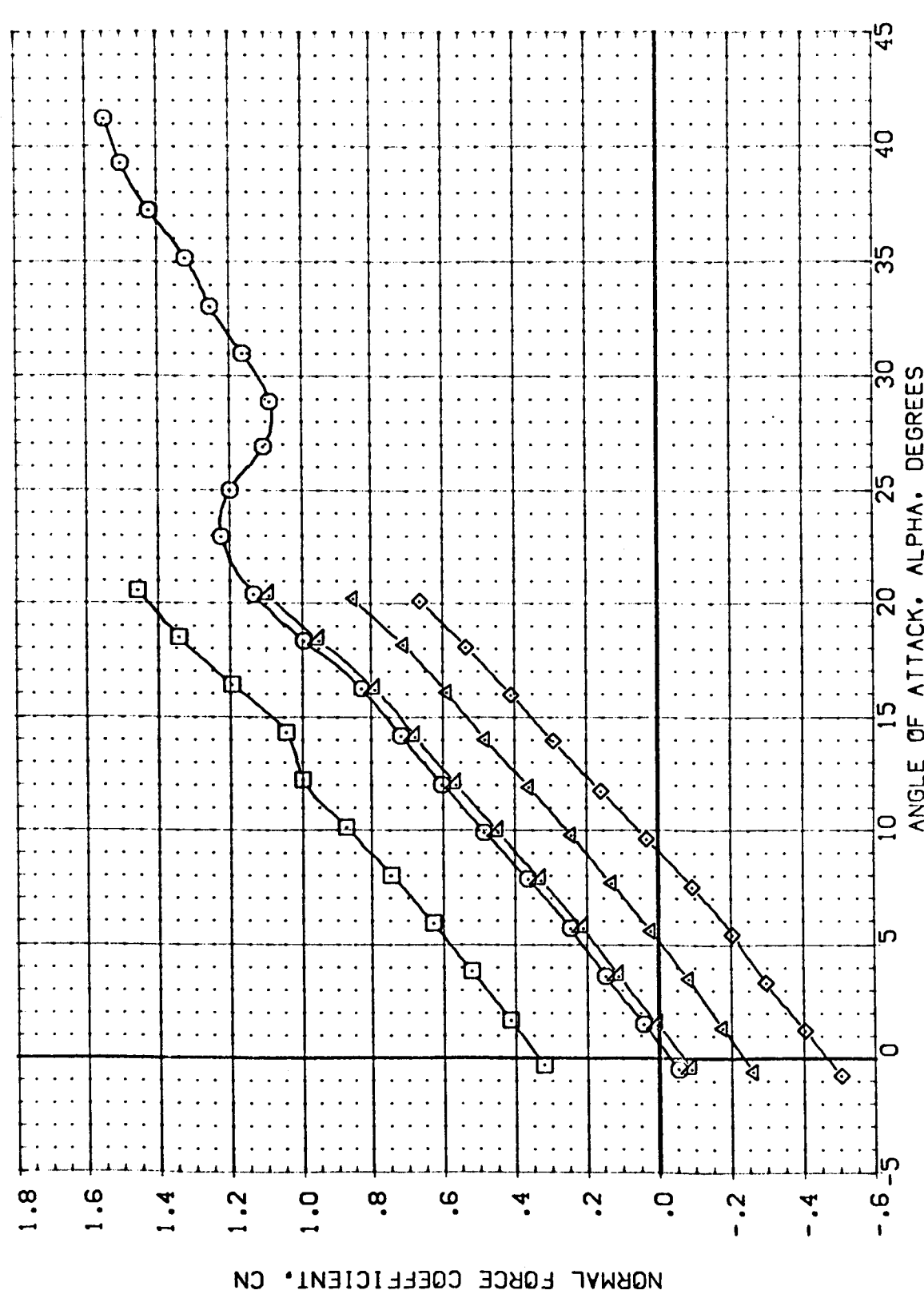


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (A)YACH = .61
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DATA SET SYMBO-	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SOCBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 139B W/ALT NOISE	.000	.000	999.999	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CR3 139B W/ALT NOISE	.000	.000	999.999	13.750	REF 474.8000
(F87S42)	MSFC 574(CA48) CR3 139B W/ALT NOISE	.000	.000	999.999	-14.250	BREF 836.7000
(F87S40)	MSFC 574(CA48) CR3 139B W/ALT NOISE	.000	.000	999.999	.000	XMRP 838.0000
(F87S44)	MSFC 574(CA48) CR3 139B W/ALT NOISE	.000	.000	999.999	-14.250	ZMRP .0000
						SCALE .0000

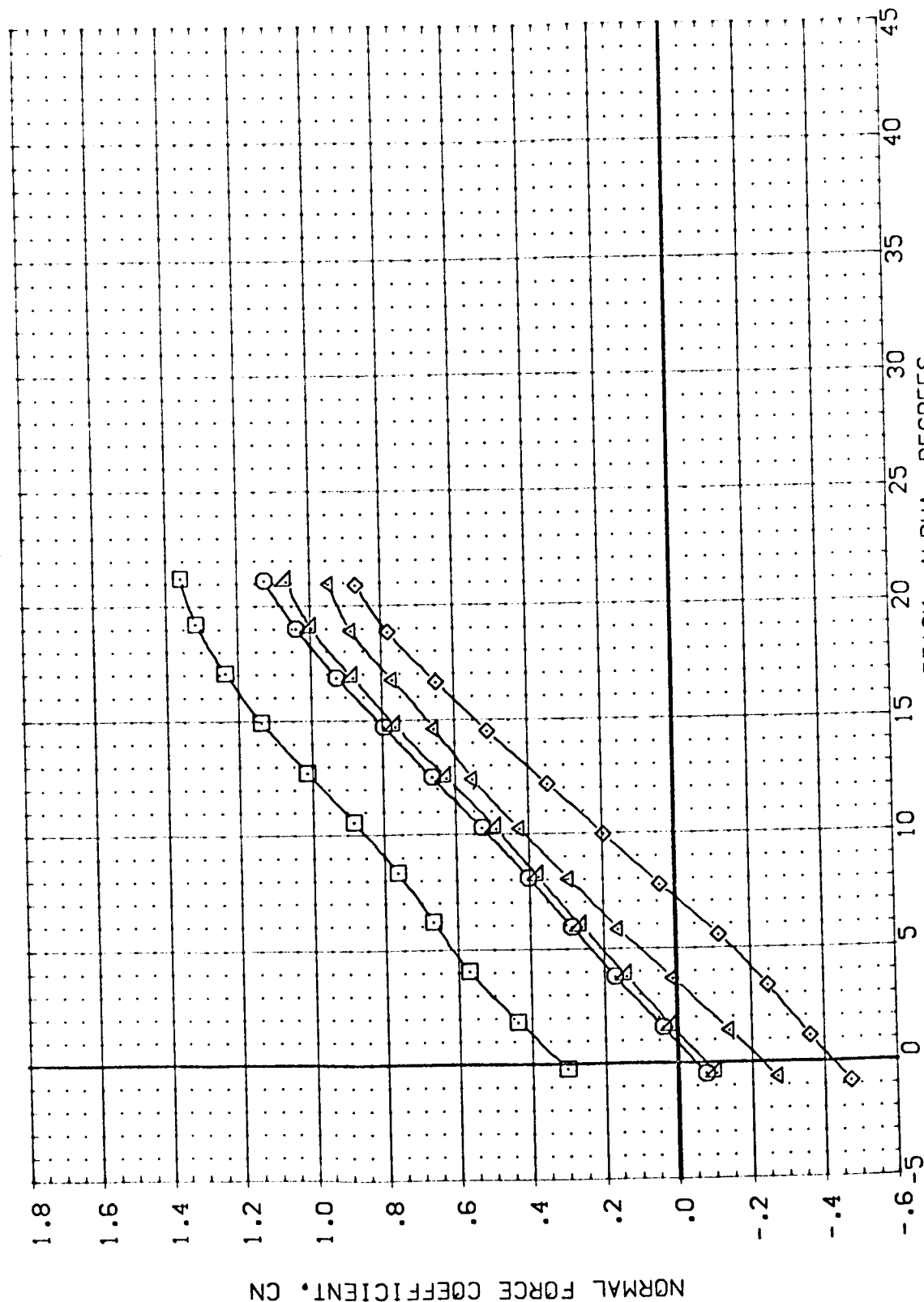


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (B) VACH = .90
 PAGE 664

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S38)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	REF 474.8000 N.
(F87S42)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	BRF 936.7000 N.
(F87S43)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	XVRP 838.7000 N.
(F87S44)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	YVRP .0000
						ZVRP .0000
						SCALE .0040

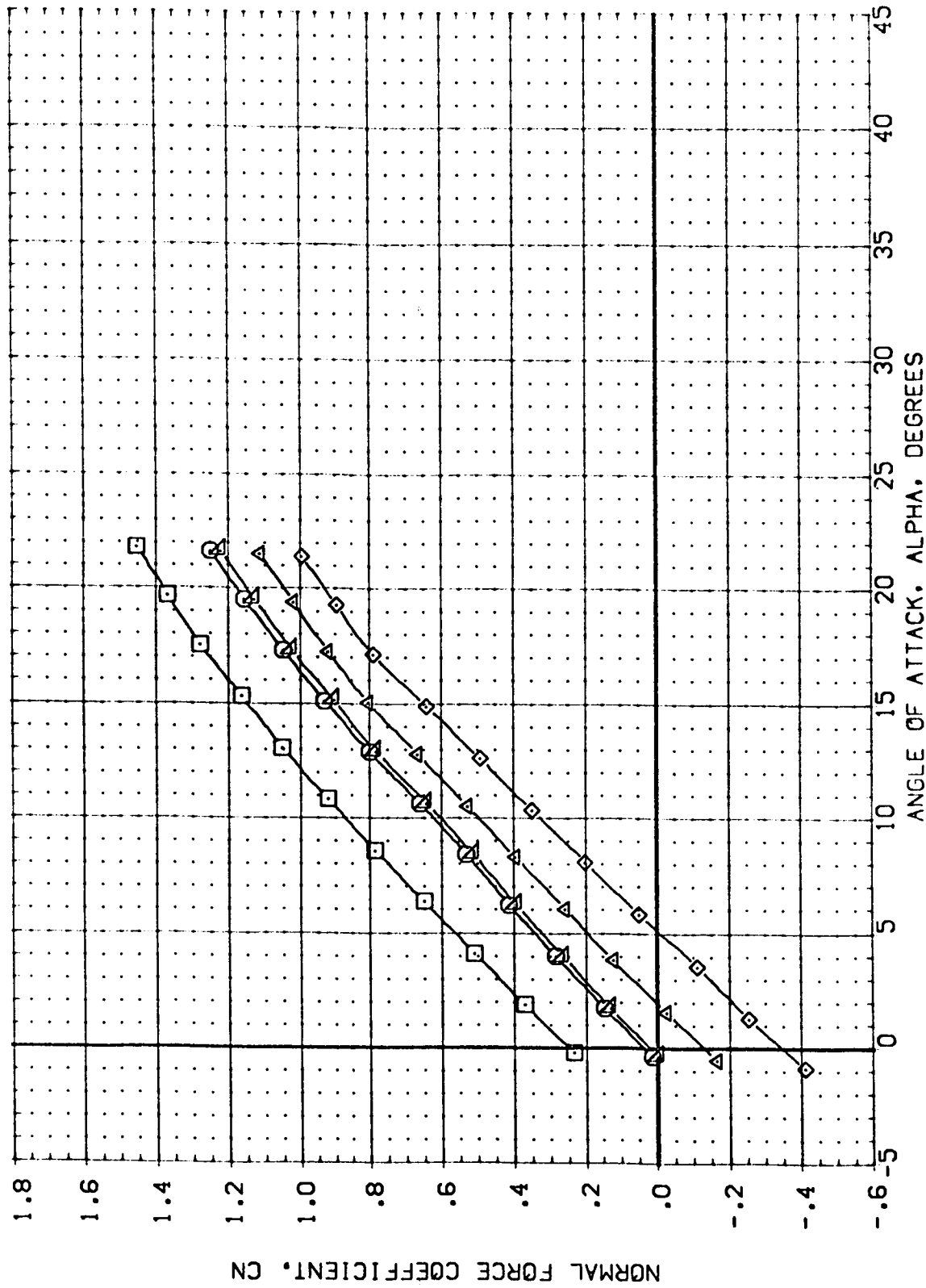


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOROK	BDCLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87538)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	15.000	999.990	.000	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	-40.000	999.990	-13.750	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	-20.000	999.990	.000	XVRP 838.7000
(F87544)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	-14.250	YVRP .0000
						ZVRP .0000
						SCALE .0040

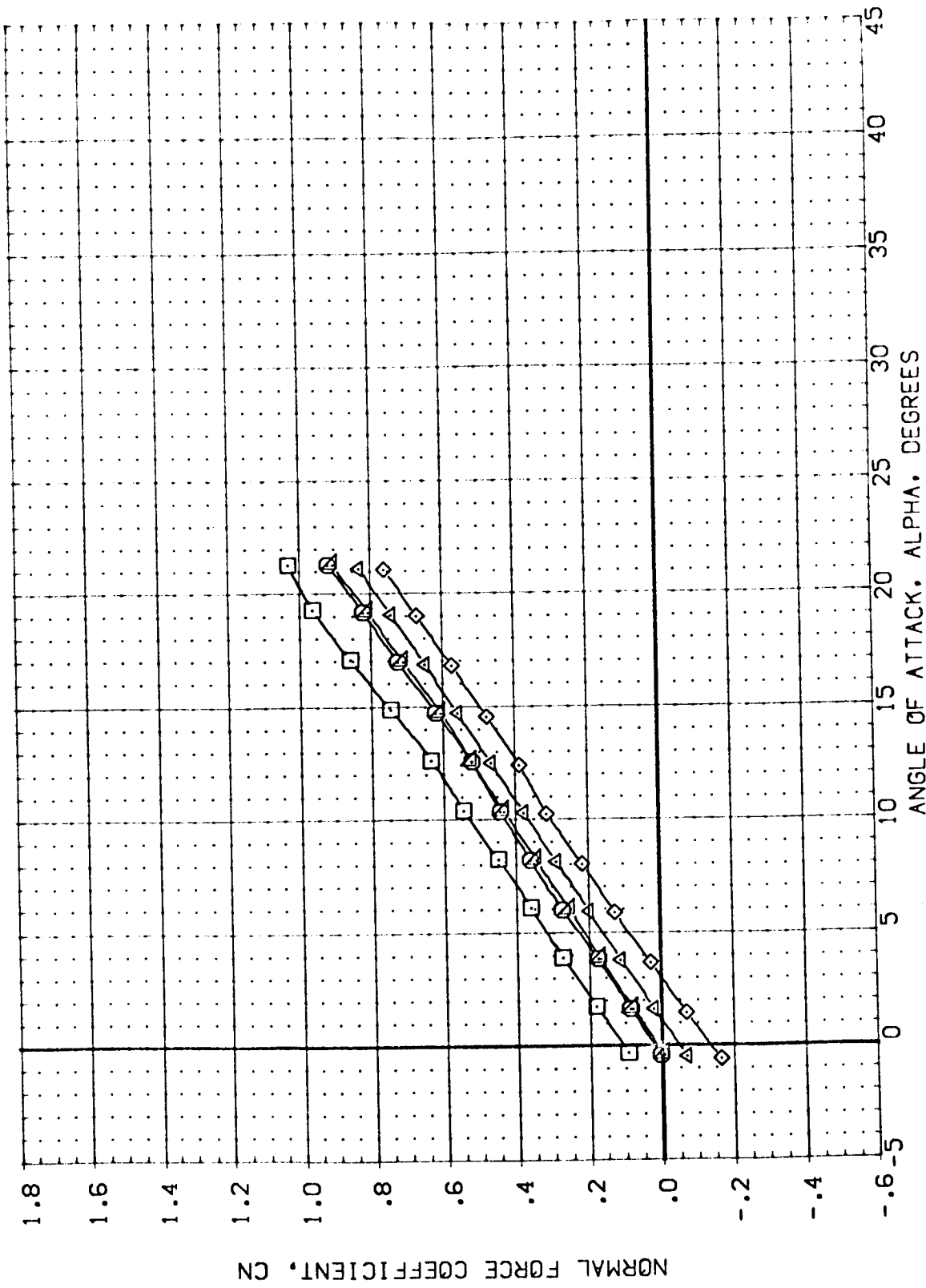


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 1398 WITH ALTERNATE NOSE
 (MACH = 1.95) PAGE 666

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	VMRP .0000
						ZMRP .0000
						SCALE .0040

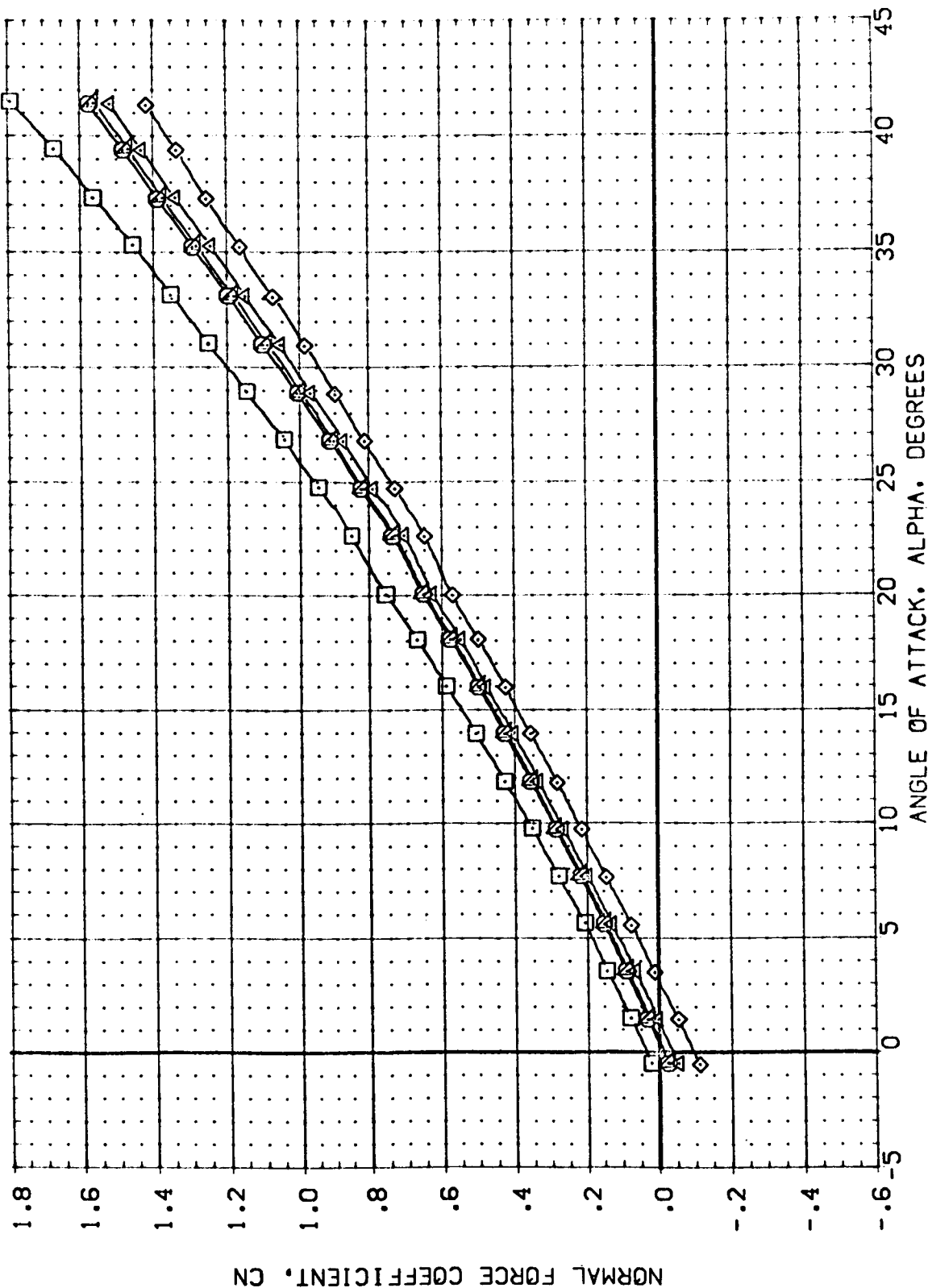


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	WSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.999	.000	SREF 2890.0000 SC.F.
(F87538)	WSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.999	13.750	LREF 474.8000
(F87542)	WSFC 574(CA48) CRB 393 W/ALT NOSE	.000	15.000	999.999	-14.250	BREF 936.7000
(F87540)	WSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-40.000	999.999	.000	XMRP 838.0000
(F87544)	WSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-20.000	999.999	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0010

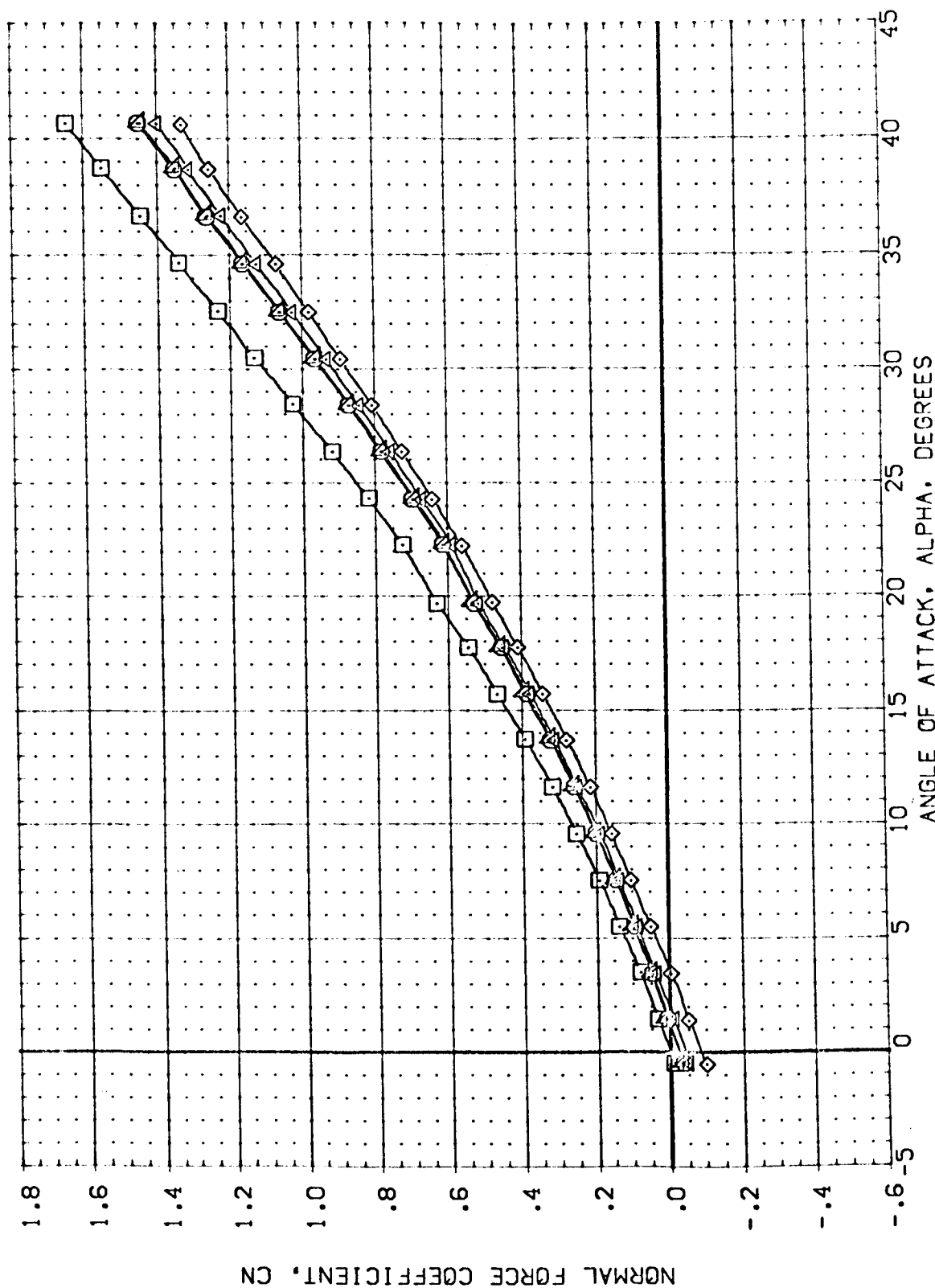


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

CEMACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA18) CR3 139B V/AL I NOSE	.000	.000	999.999	.000	SCF 2650.0000 SC.F.T.
(F87S38)	MSFC 574(CA18) CR3 139B V/AL I NOSE	.000	.000	999.999	.000	SCF 2650.0000 SC.F.T.
(F87S32)	MSFC 574(CA18) CR3 139B V/AL I NOSE	.000	.000	999.999	.000	SCF 2650.0000 SC.F.T.
(F87S33)	MSFC 574(CA18) CR3 139B V/AL I NOSE	.000	.000	999.999	.000	SCF 2650.0000 SC.F.T.
(F87S34)	MSFC 574(CA18) CR3 139B V/AL I NOSE	.000	.000	999.999	.000	SCF 2650.0000 SC.F.T.
						SCALE

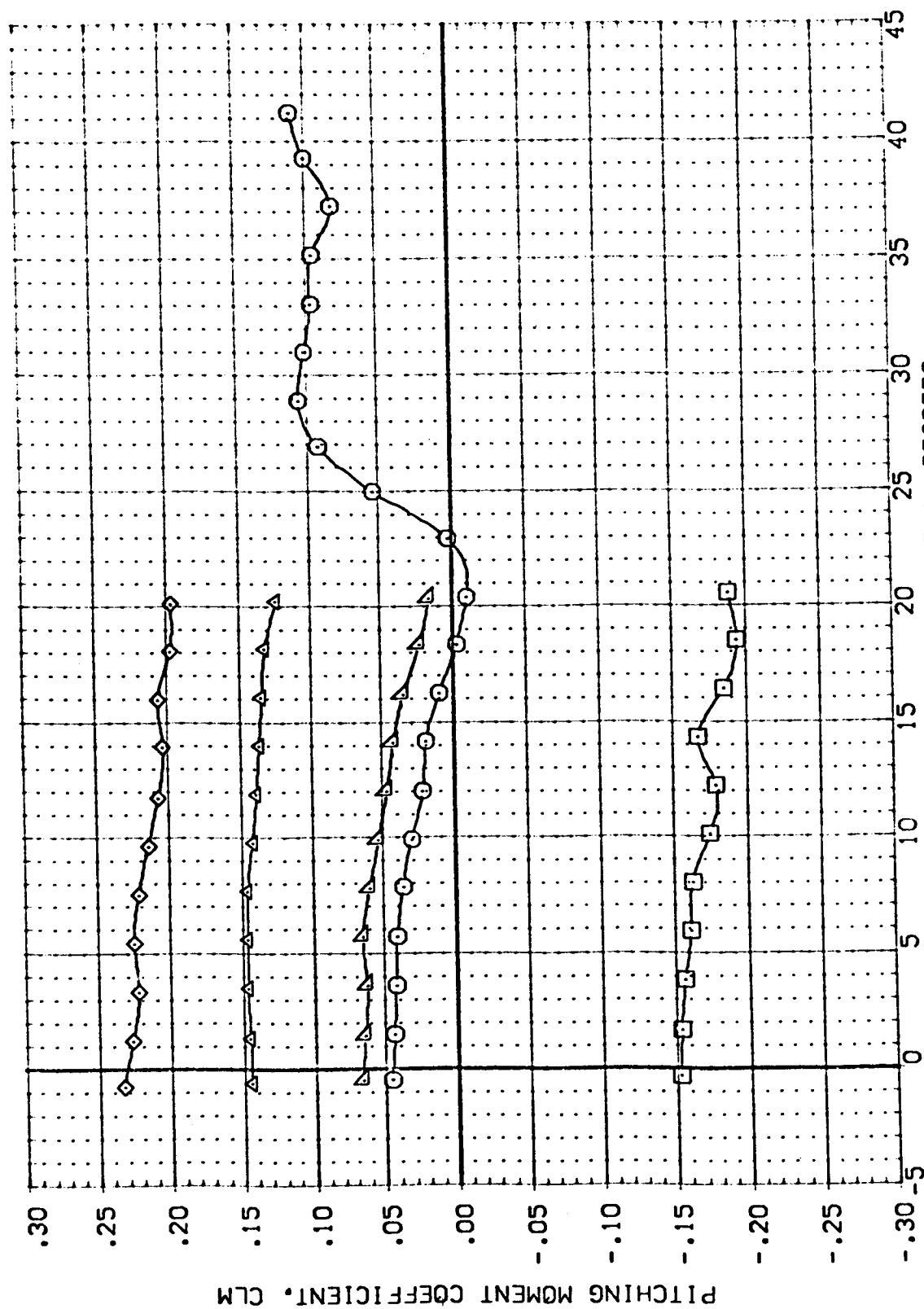


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.999	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	15.000	999.999	13.750	LRIF 474.8000
(F87539)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	-40.000	999.999	-14.250	BRIF 936.7000
(F87540)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	-70.000	999.999	-14.250	XRIF 838.7000
(F87541)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.999	.000	YMRP .0000
						SCALE .0040

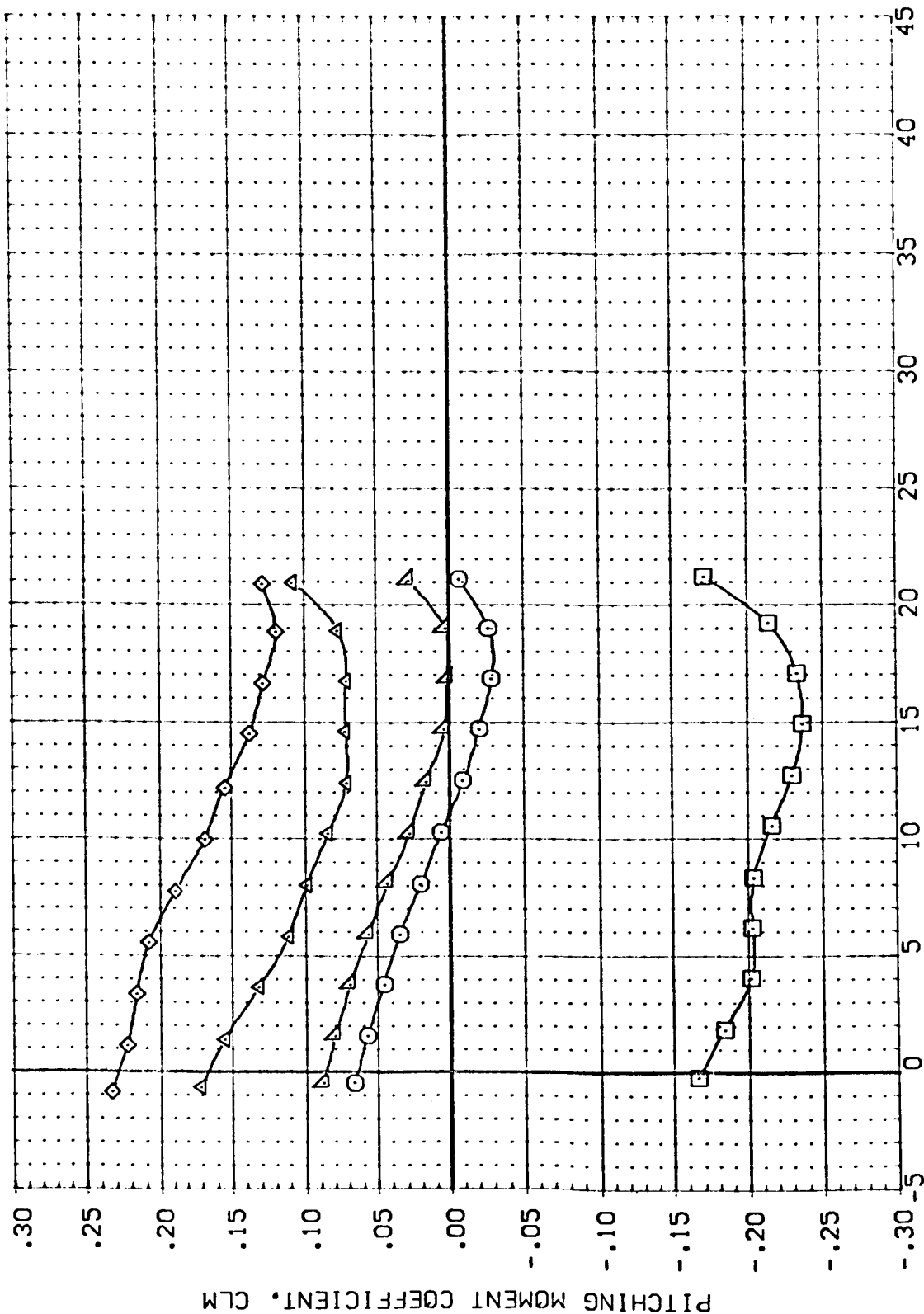


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

(B) VACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPO3RK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 1398 W/ALT NOSE	.000	.000	999.999	.000	SREF 2690 0000 SC.FT.
(F87S38)	MSFC 574(CA48) CR3 1398 W/ALT NOSE	.000	.000	999.999	13.750	LR.F 474.8000
(F87S42)	MSFC 574(CA48) CR3 1398 W/ALT NOSE	.000	-40.000	999.999	-14.250	BR.F 936.7000
(F87S43)	MSFC 574(CA48) CR3 1398 W/ALT NOSE	.000	-20.000	999.999	.000	XMRP 838.7000
(F87S44)	MSFC 574(CA48) CR3 1398 W/ALT NOSE	.000	.000	999.999	-14.250	YMRP 0000.0000
						ZMRP 0000.0000
						SCALE 00010

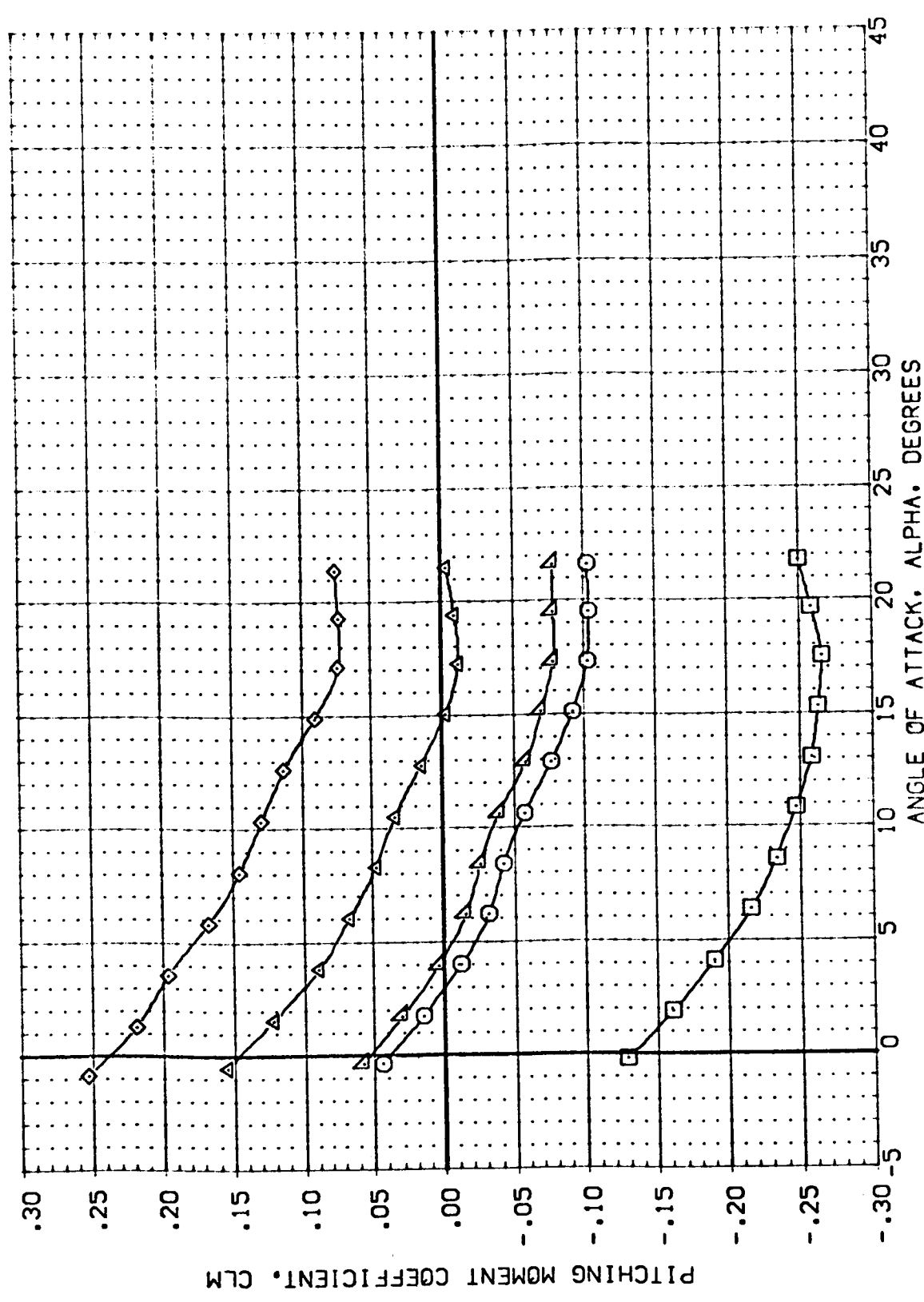


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (C)MACH = 1.19
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	WSEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	WSEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	13.750	LRFL 474.8000
(F87S42)	WSEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	-14.250	BRFL 936.7000
(F87S40)	WSEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	XV3P 898.7000
(F87S44)	WSEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	-14.250	YV3P .0000
						ZV3P .0000
						SCALE .0040

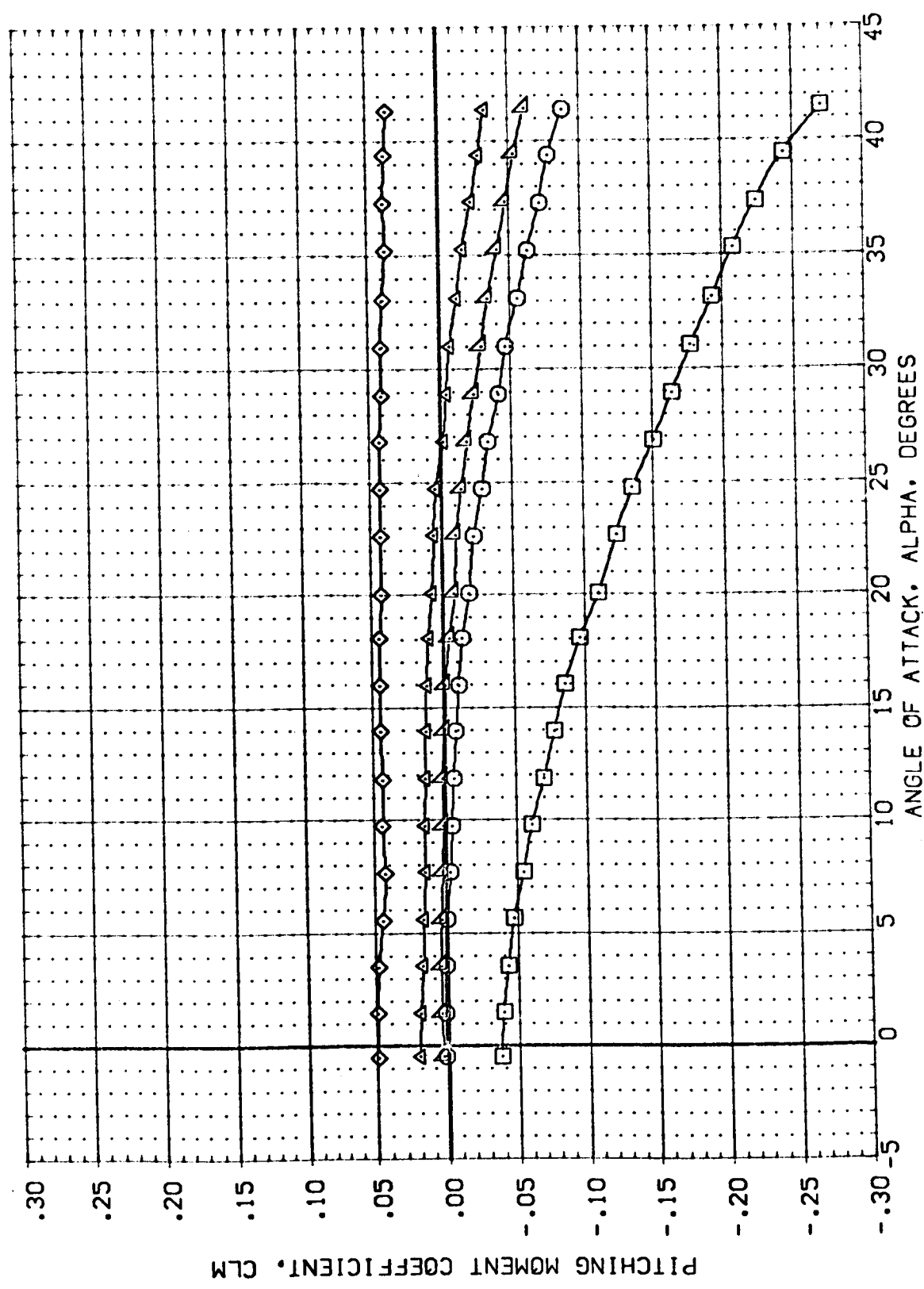


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

(CD)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOELAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CR3 393 V/AL1 NOSE	.000	.000	999.990	.000	SREF 2600.0000
(F87538)	MSFC 574(CA48) CR3 393 V/AL1 NOSE	.000	.150	999.990	.000	LREF 474.8000
(F87542)	MSFC 574(CA48) CR3 393 V/AL1 NOSE	.000	.400	999.990	.000	BREF 936.7000
(F87540)	MSFC 574(CA48) CR3 393 V/AL1 NOSE	.000	.200	999.990	.000	XREF 838.7000
(F87544)	MSFC 574(CA48) CR3 393 V/AL1 NOSE	.000	.000	999.990	.000	YREF 838.7000
						ZREF 838.7000
						SCALE .0040

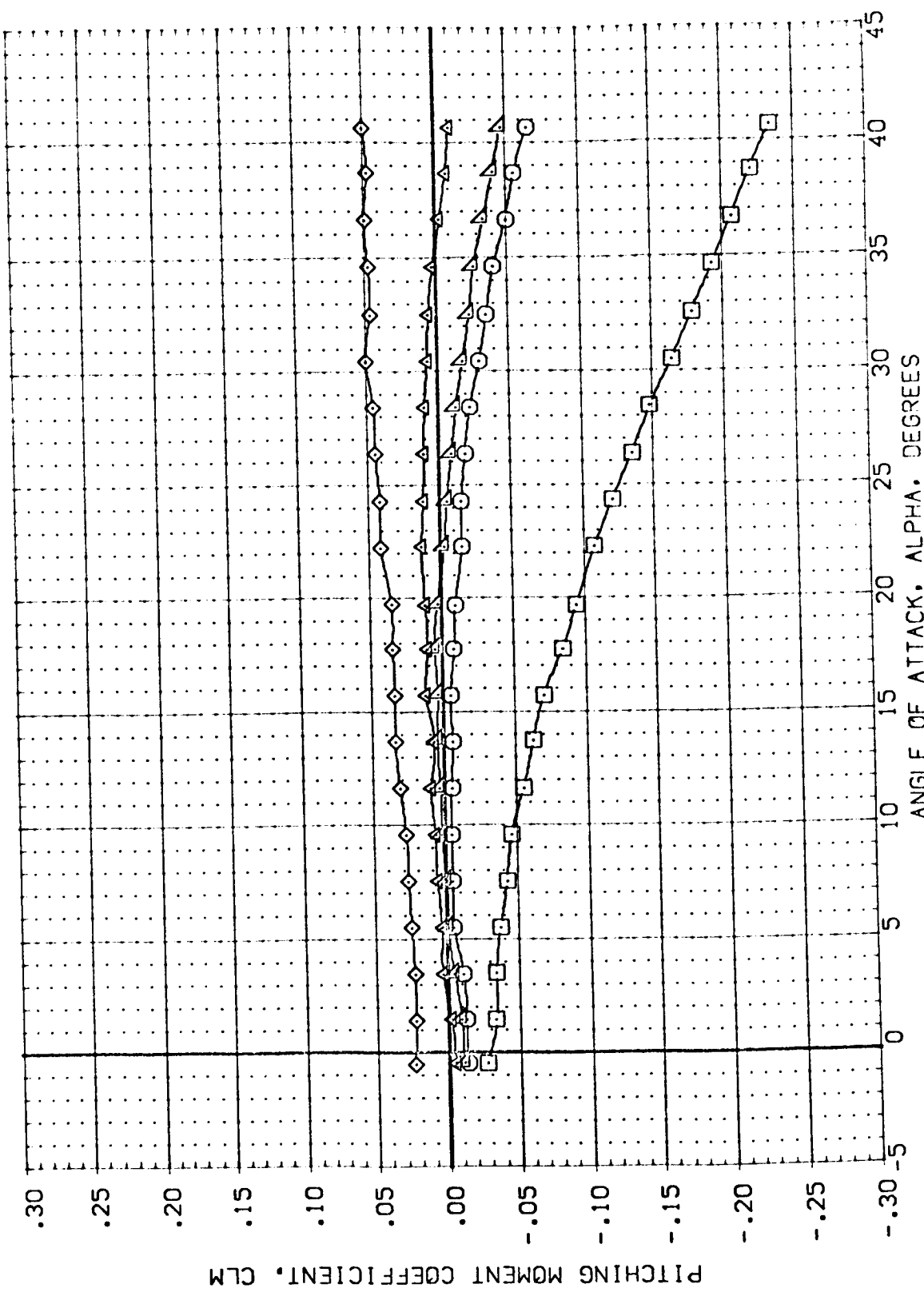


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (F87544) = 4.96
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DATA SET SYMBOL: **CAKX**

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CAK8) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	MSFC 574(CAK8) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CAK8) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CAK8) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CAK8) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

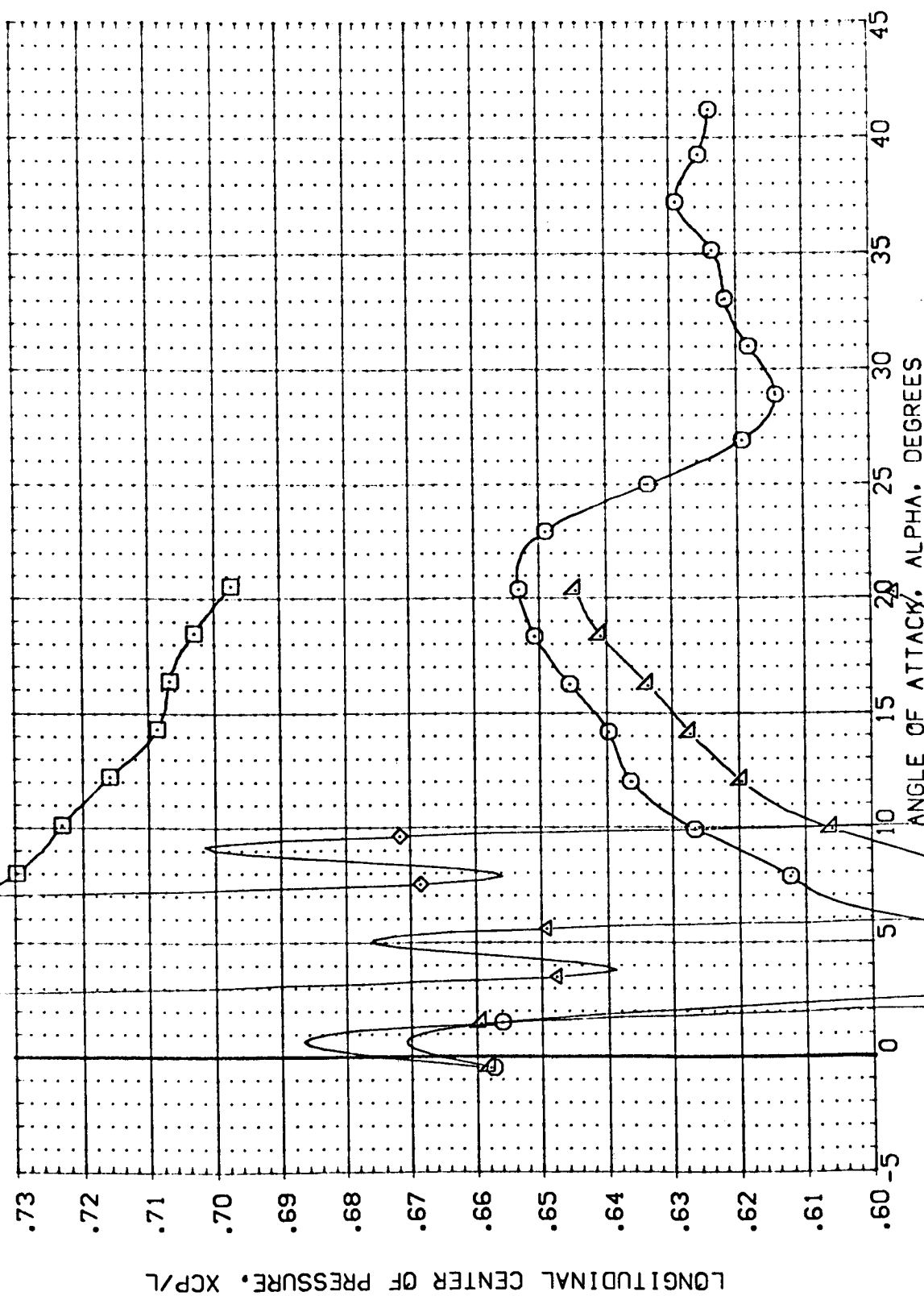


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

CA0MACH = .6

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DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87532)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87533)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	BREF 936.7000
(F87534)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	XVRP 838.7000
(F87535)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YVRP .0000
(F87536)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	ZVRP .0000
(F87537)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SCALE .0040

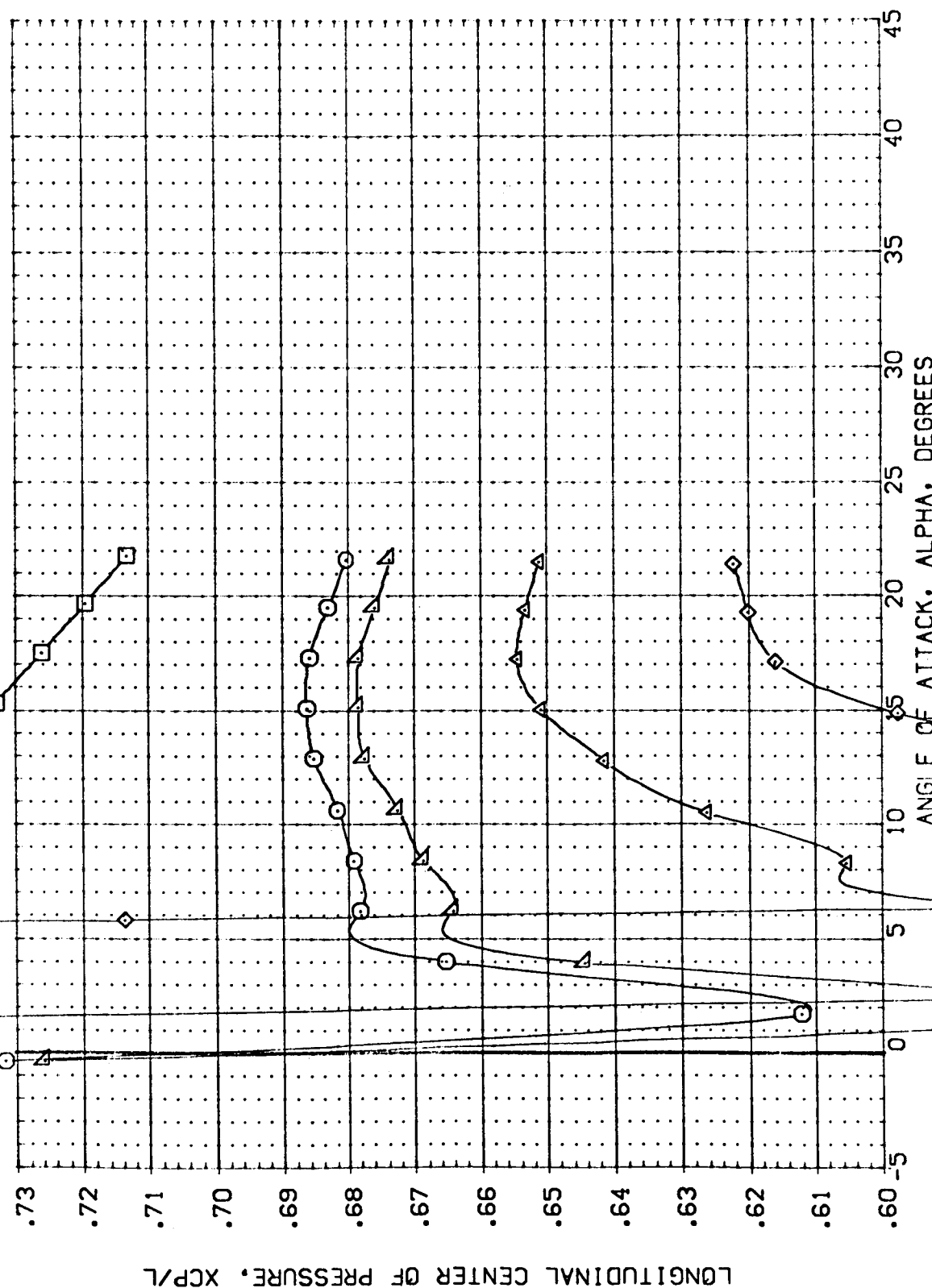
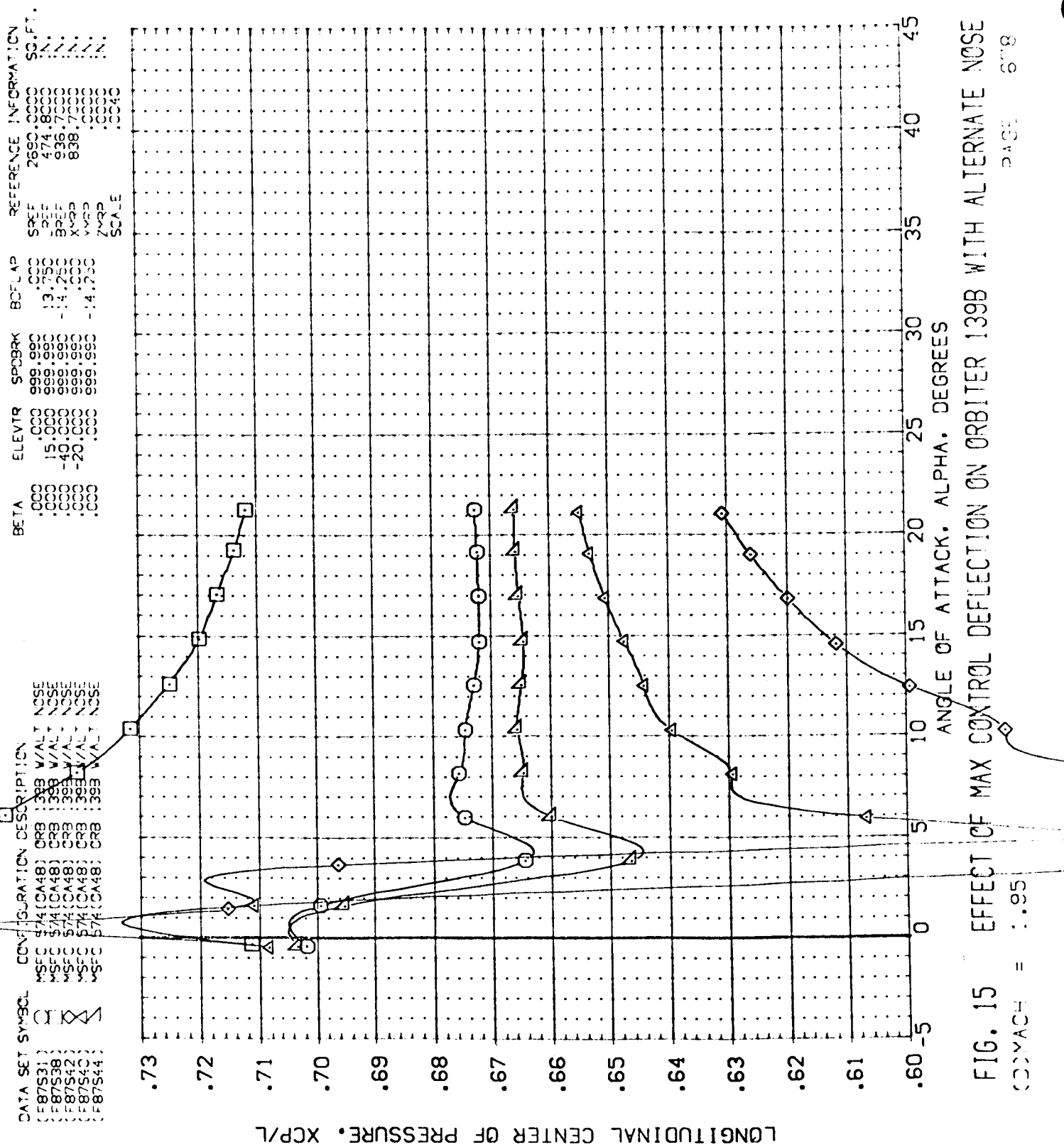


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

(C)MACH = 1.19

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SXCT 2690.0000
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	BOFL 474.8000
(F87532)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BOFL 936.7000
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	BOFL 838.0000
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	BOFL 936.7000
						SCALE .0010

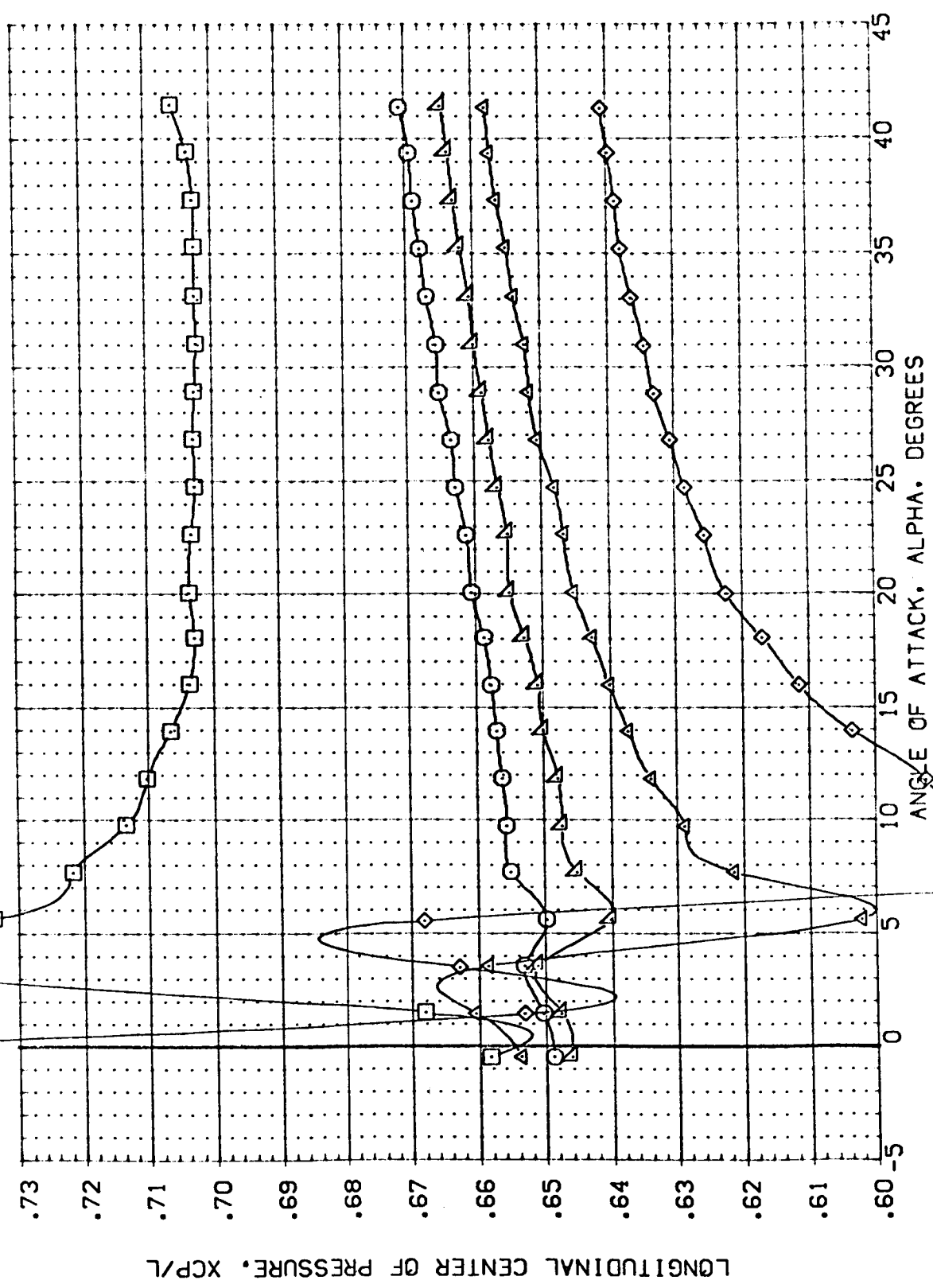


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(F87S31)	MS-C 574(CA48)	CRB 139B W/ALT NCSE
(F87S38)	MS-C 574(CA48)	CRB 139B W/ALT NCSE
(F87S42)	MS-C 574(CA48)	CRB 139B W/ALT NCSE
(F87S43)	MS-C 574(CA48)	CRB 139B W/ALT NCSE
(F87S44)	MS-C 574(CA48)	CRB 139B W/ALT NCSE

BETA ELEVTR SPCBRK BOFLAP REFERENCE INFORMATION

BETA	ELEVTR	SPCBRK	BOFLAP	REFERENCE INFORMATION
.000	.000	.000	.000	SREF 2680.0000 SQ.FT.
.000	.000	.000	.000	LREF 474.8000
.000	.000	.000	.000	BREF 936.0000
.000	.000	.000	.000	XVRP 838.7000
.000	.000	.000	.000	YVRP 0.0000
.000	.000	.000	.000	ZVRP 0.0000
.000	.000	.000	.000	SCALE 0.0000

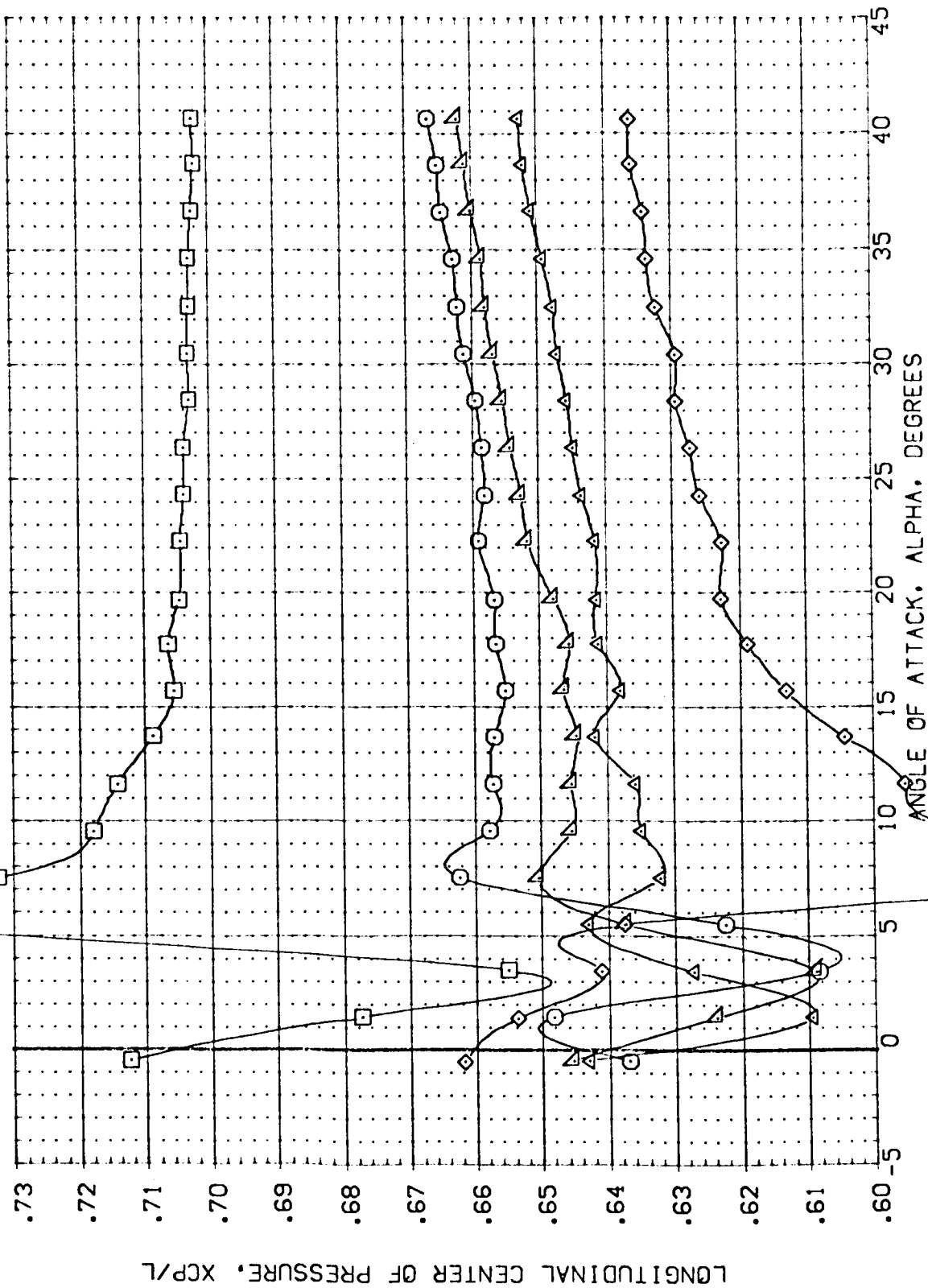


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NCSE

CE0VACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	WSFC 574 (CA48) CRB 393 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	WSFC 574 (CA48) CRB 393 W/ALT NCSE	.000	.000	999.990	13.750	LREF 474.8000
(F87S42)	WSFC 574 (CA48) CRB 393 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 938.7000
(F87S40)	WSFC 574 (CA48) CRB 393 W/ALT NCSE	.000	-20.000	999.990	.000	XV3P 838.7000
(F87S44)	WSFC 574 (CA48) CRB 393 W/ALT NCSE	.000	.000	999.990	-14.250	V3P3 .0000
						Z3P3 .0000
						SCALE .0000

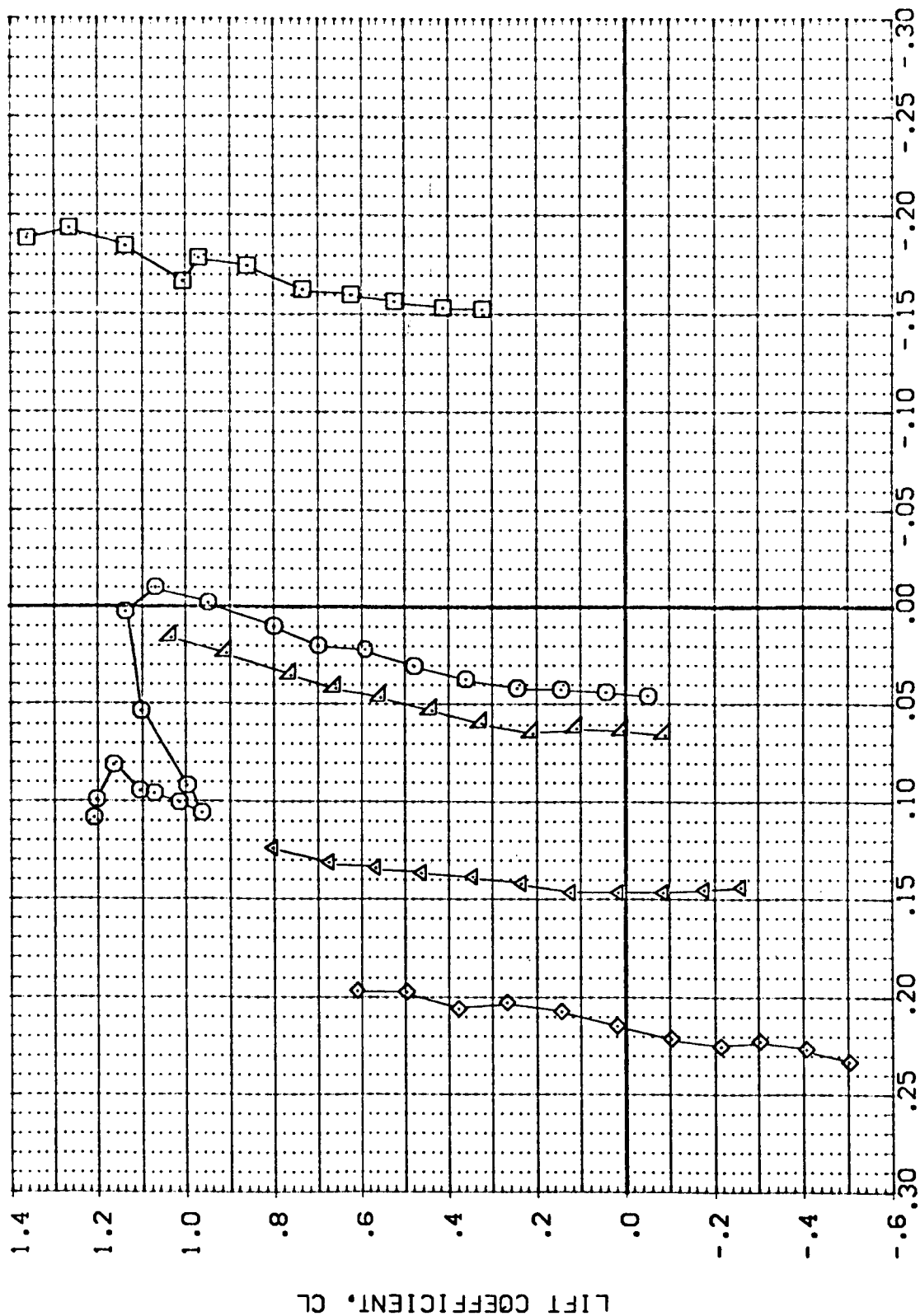


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NCSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPGRM	BCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574 (CA48) CR3 393 W/ALT NOSE	.000	.000	999.999	.000	SREF 2890.0000 SC.F. 1.000
(F87538)	MSFC 574 (CA48) CR3 393 W/ALT NOSE	.000	.000	999.999	.000	UREF 474.8000
(F87542)	MSFC 574 (CA48) CR3 393 W/ALT NOSE	.000	.15	999.999	13.750	BREF 935.7000
(F87540)	MSFC 574 (CA48) CR3 393 W/ALT NOSE	.000	-40	999.999	-14.250	XMRP .0000
(F87544)	MSFC 574 (CA48) CR3 393 W/ALT NOSE	.000	-20	999.999	.000	YMRP .0000
		.000	.000	999.999	-14.250	ZMRP .0000
						SCALE .0040

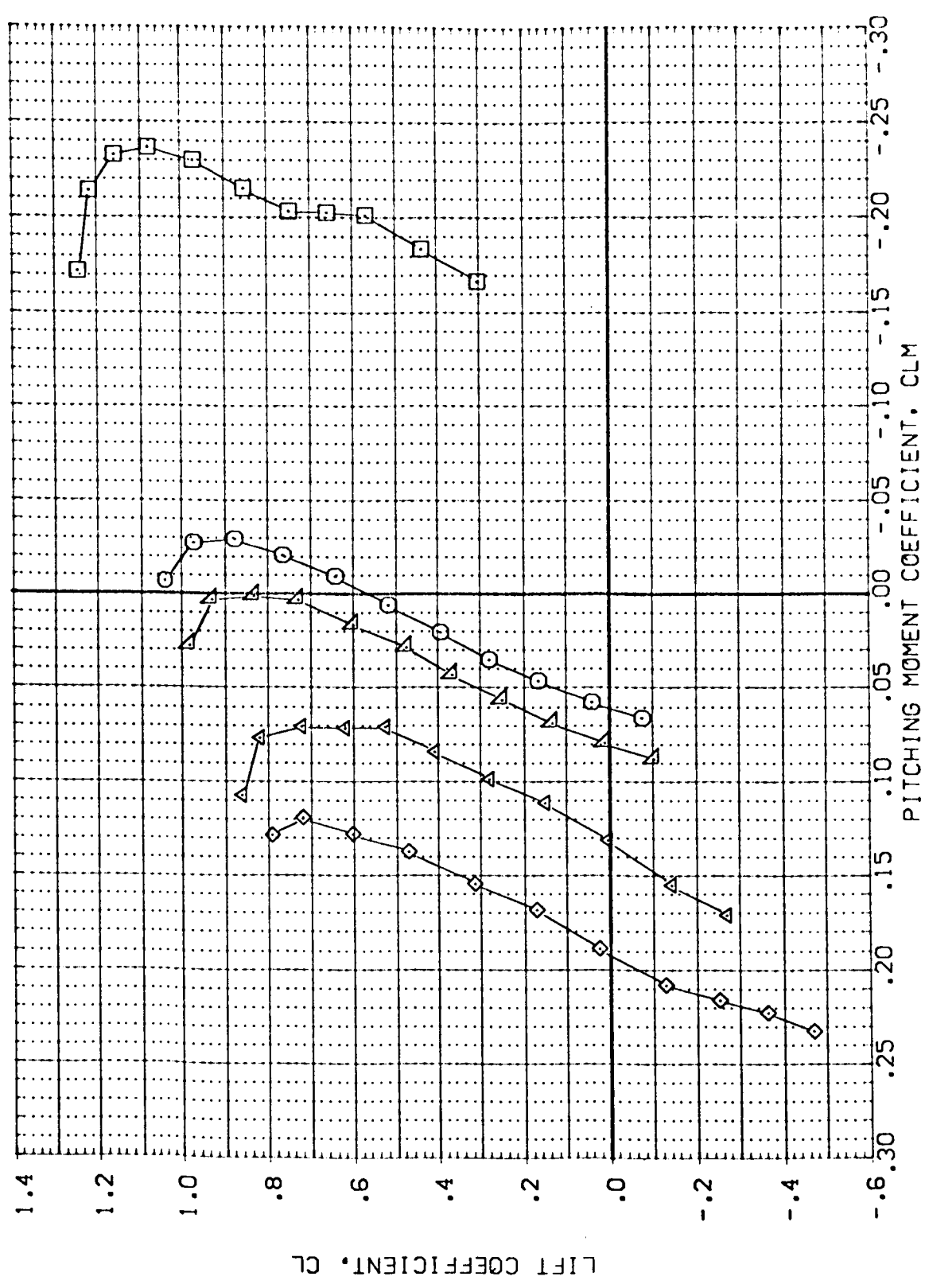


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B) VACH = .90
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SCALE
(F87S31)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	SREF 2690.0000	SCA.F.T.
(F87S38)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	15.000	999.999	13.750	REF 474.8000	---
(F87S42)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-10.000	999.999	-14.250	BRF 936.7000	---
(F87S40)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-20.000	999.999	.000	XVRB 838.7000	---
(F87S44)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	-14.250	ZVRB .0000	---
						SCALE .0040	

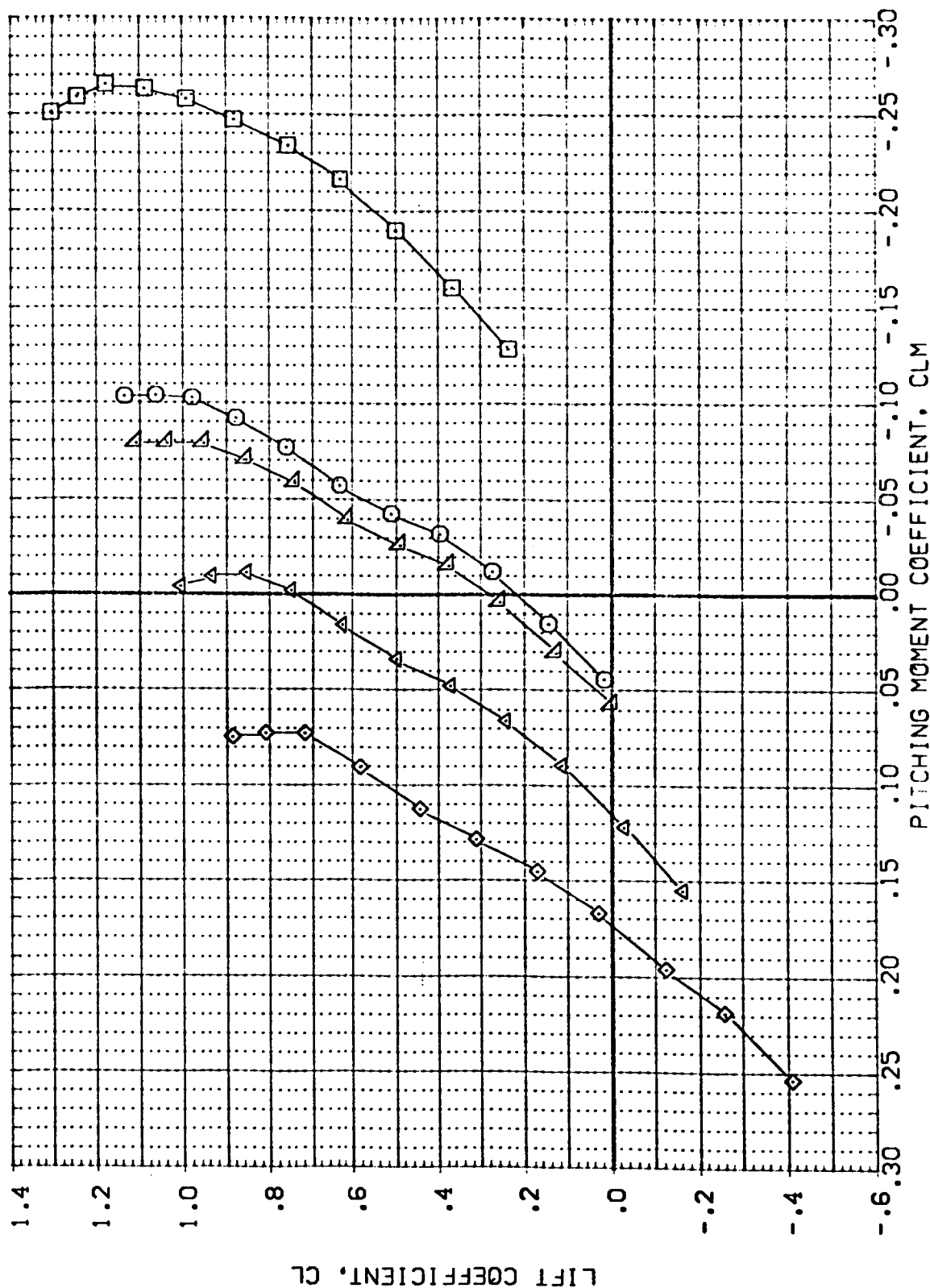


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 (363 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	MSFC 574(CA48) CR3 (363 W/ALT NCSE	.000	.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CR3 (363 W/ALT NCSE	.000	-40.000	999.990	-14.750	BREF 536.7000
(F87S40)	MSFC 574(CA48) CR3 (363 W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.0000
(F87S44)	MSFC 574(CA48) CR3 (363 W/ALT NCSE	.000	.000	999.990	-14.750	ZMRP .0000
						SCALE .0010

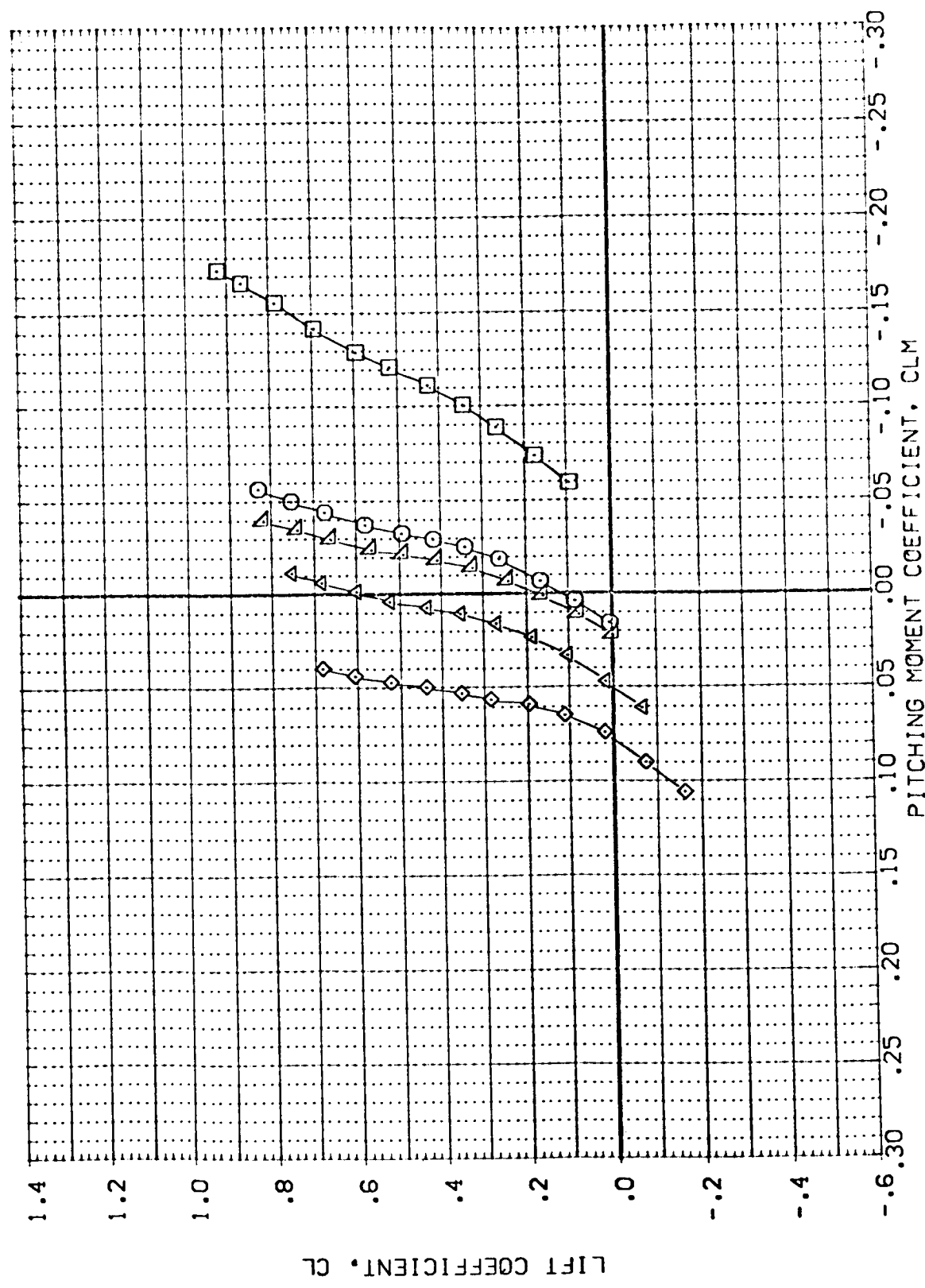


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOISE
 (C) VACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPDRK	BDELAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 1393 W/ALT NCSE	.000	.000	999.999	.000	SREF 2690 0000
(F87S38)	MSFC 574(CA48) CR3 1393 W/ALT NCSE	.000	.000	999.999	.000	LBEP 474 8000
(F87S42)	MSFC 574(CA48) CR3 1393 W/ALT NCSE	.000	15.000	999.999	13.750	BREF 938 7000
(F87S40)	MSFC 574(CA48) CR3 1393 W/ALT NCSE	.000	-10.000	999.999	-14.250	XVRP 838 7000
(F87S44)	MSFC 574(CA48) CR3 1393 W/ALT NCSE	.000	-20.000	999.999	-14.250	YVRP 0000 0000
		.000	.000	999.999	.000	ZVRP 0000 0000
		.000	.000	999.999	.000	SCALE 0000 0000

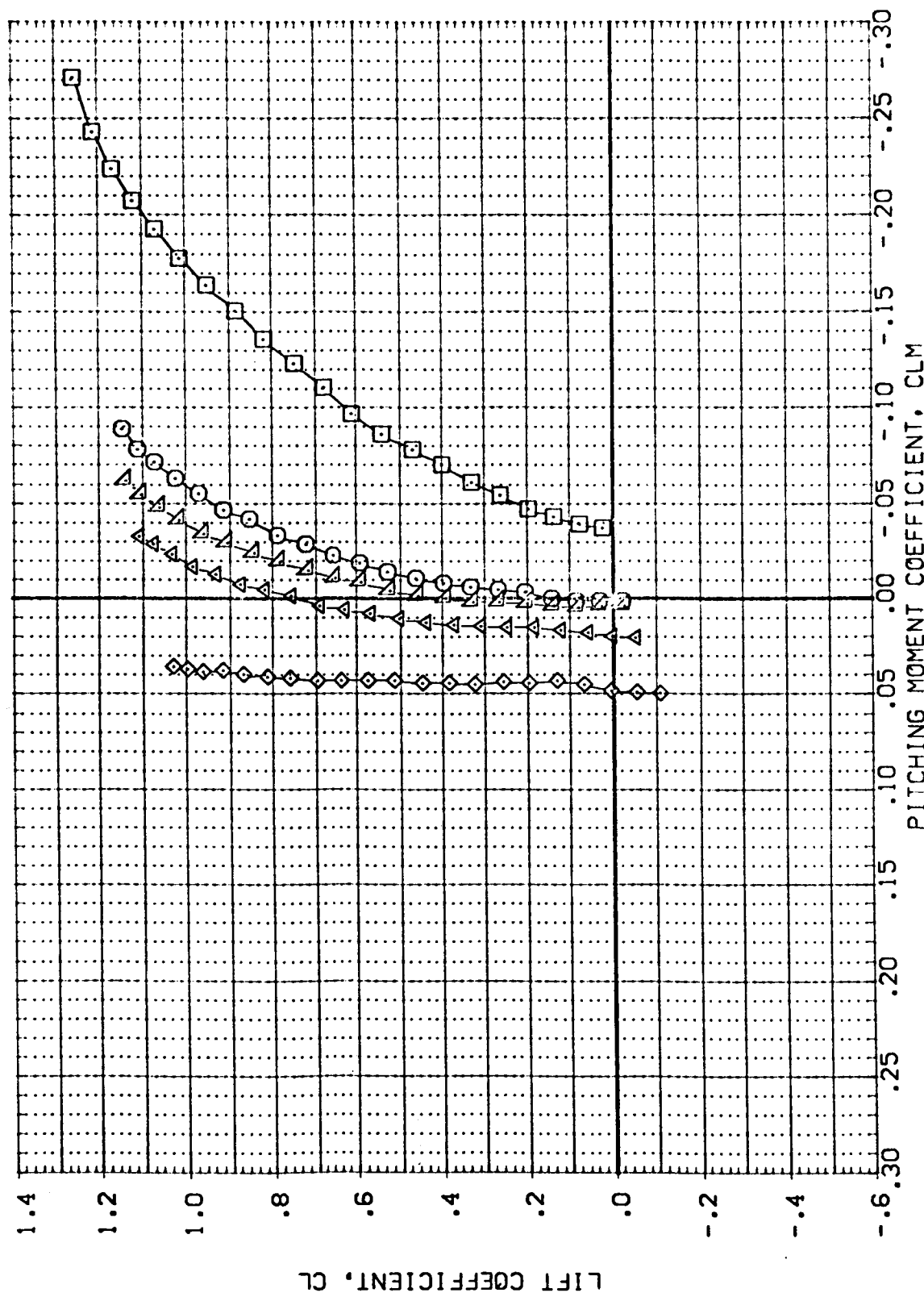


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (E)MACH = 2.99 PAGE 685

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XV20 838.7000 N.
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	V200 .00000
						ZV20 .00000
						SCALE .0040

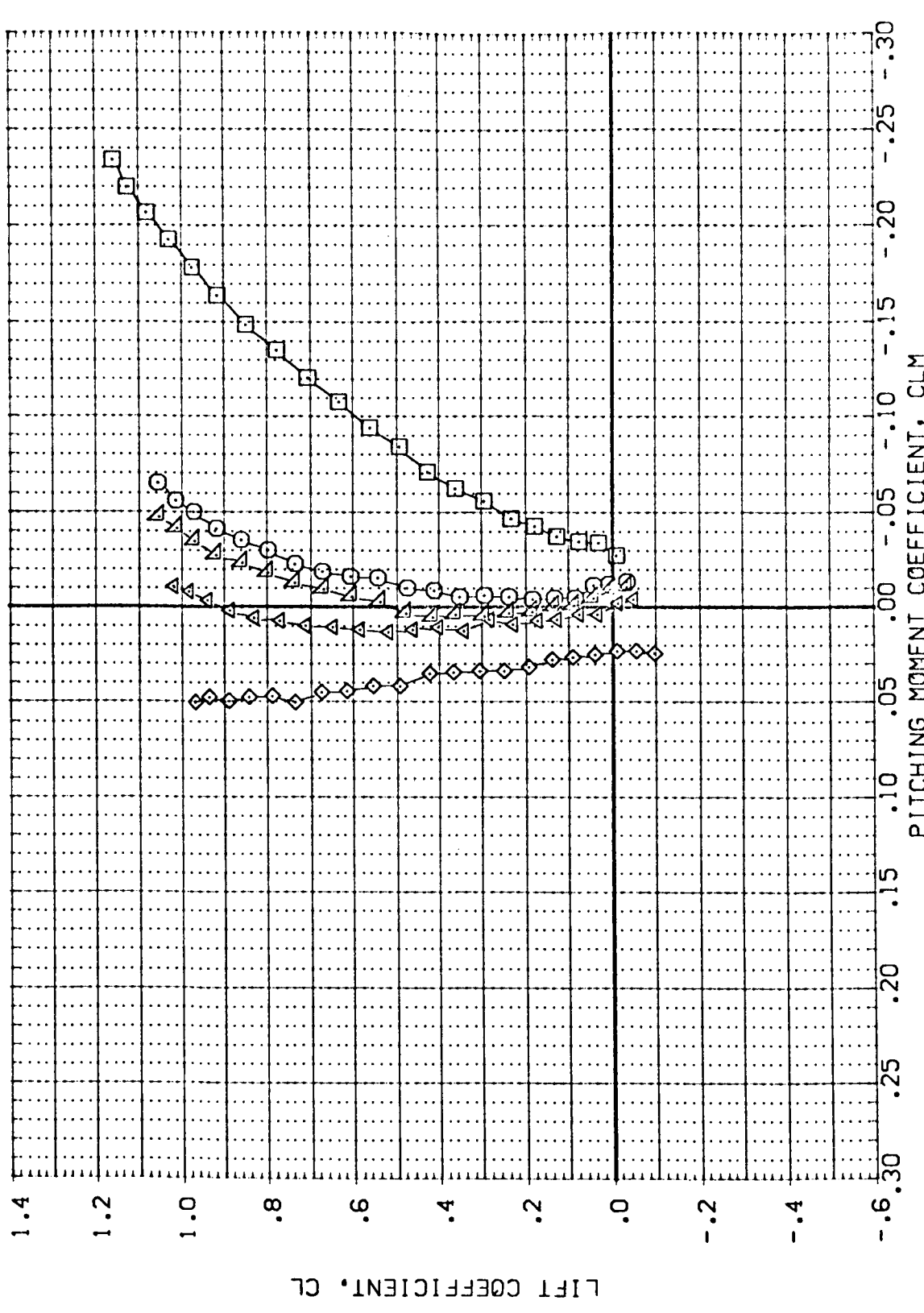


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOGRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	□	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.V.
(F87S38)	○	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	△	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	◇	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XVRP 838.7000
(F87S44)	×	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	ZVRP .0000
							SCALE .0040

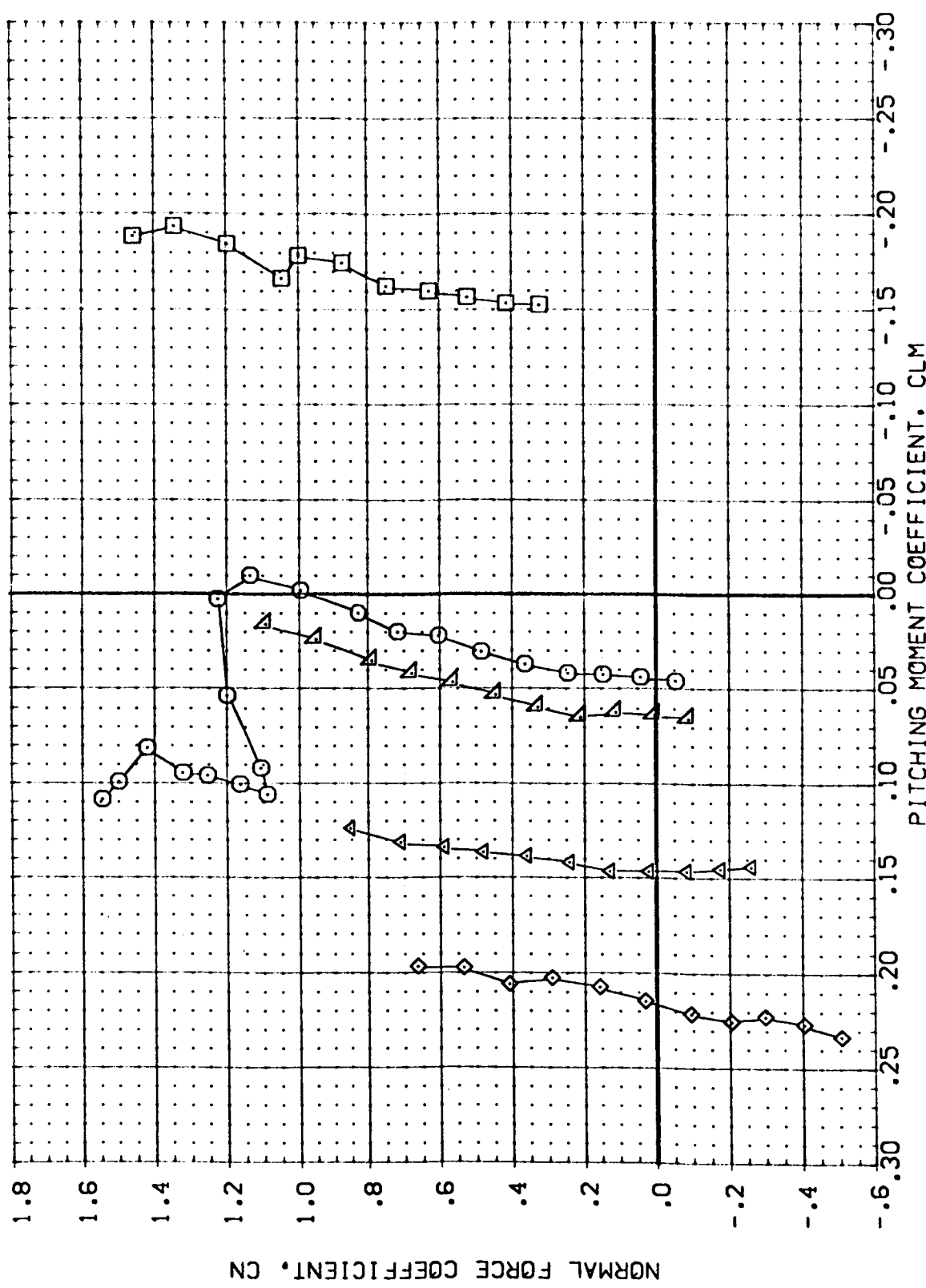


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOELAP	REFERENCE INFORMATION
{F87531}	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2890.0000 SC.FT.
{F87538}	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
{F87542}	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
{F87540}	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	-20.000	999.990	-14.250	XREF 838.7000
{F87544}	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	-14.250	YREF .0000
		.000	.000	999.990	-14.250	ZREF .0000
						SCALE .0040

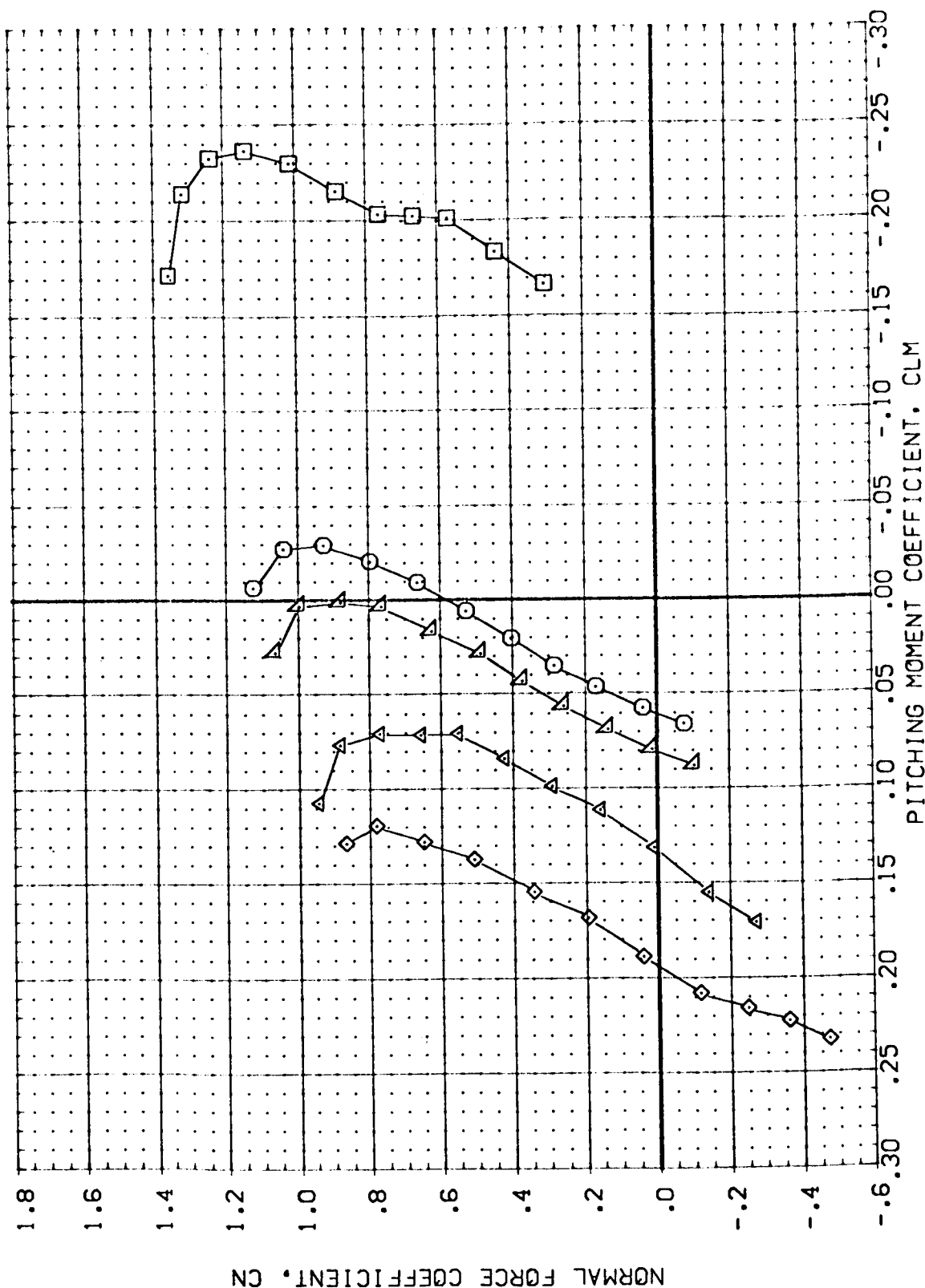
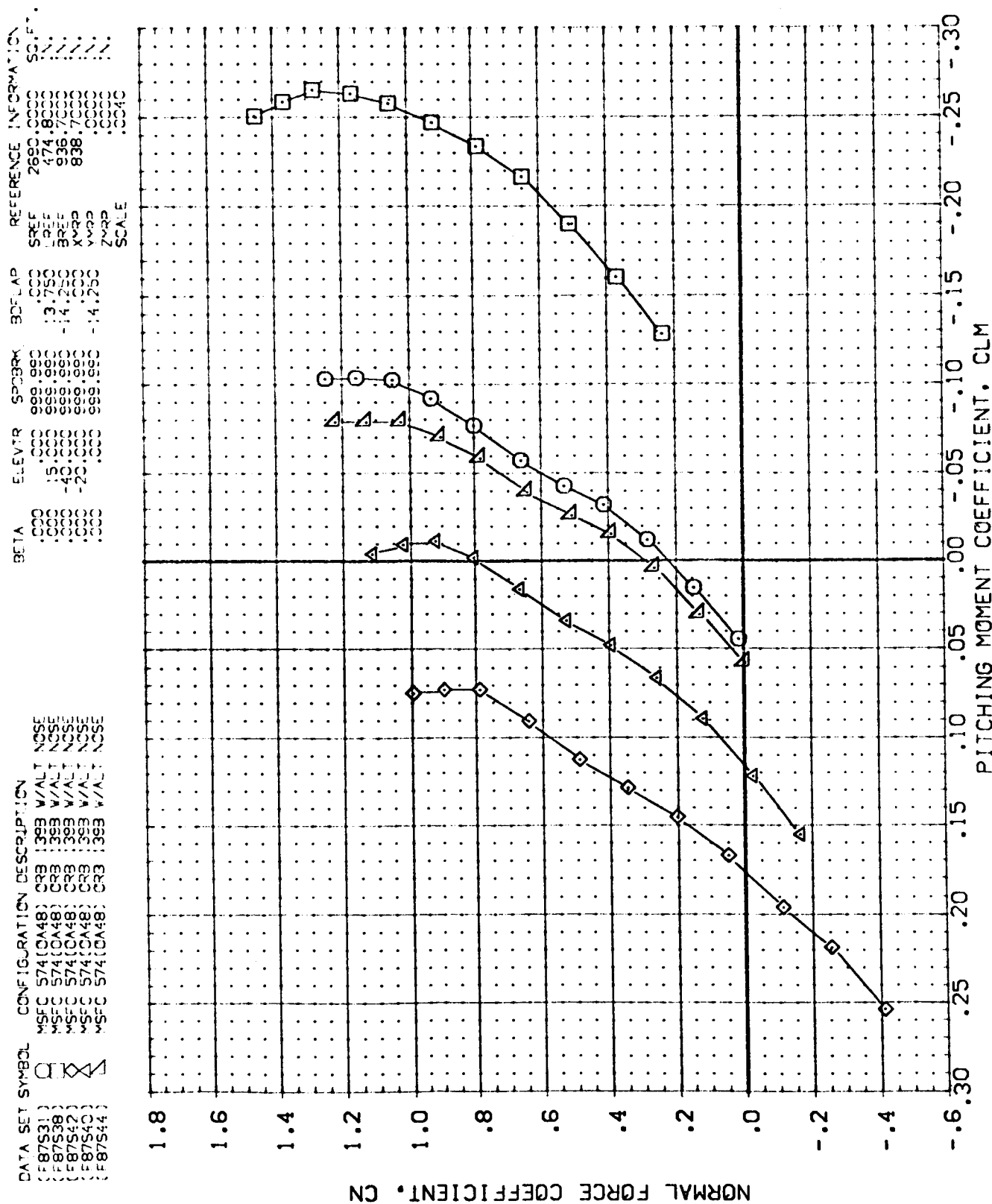


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

(B) VACH = .90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF: 2690.0000 SC.F.
(F87S38)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	13.750	REF: 474.8000
(F87S32)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	-14.250	BREF: 936.70000
(F87S40)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	-5.000	999.990	.000	XMRP: 838.00000
(F87S42)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	-10.000	999.990	.000	VMRP: 0.00000
(F87S44)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	ZMRP: 0.00000
						SCALE: .0040

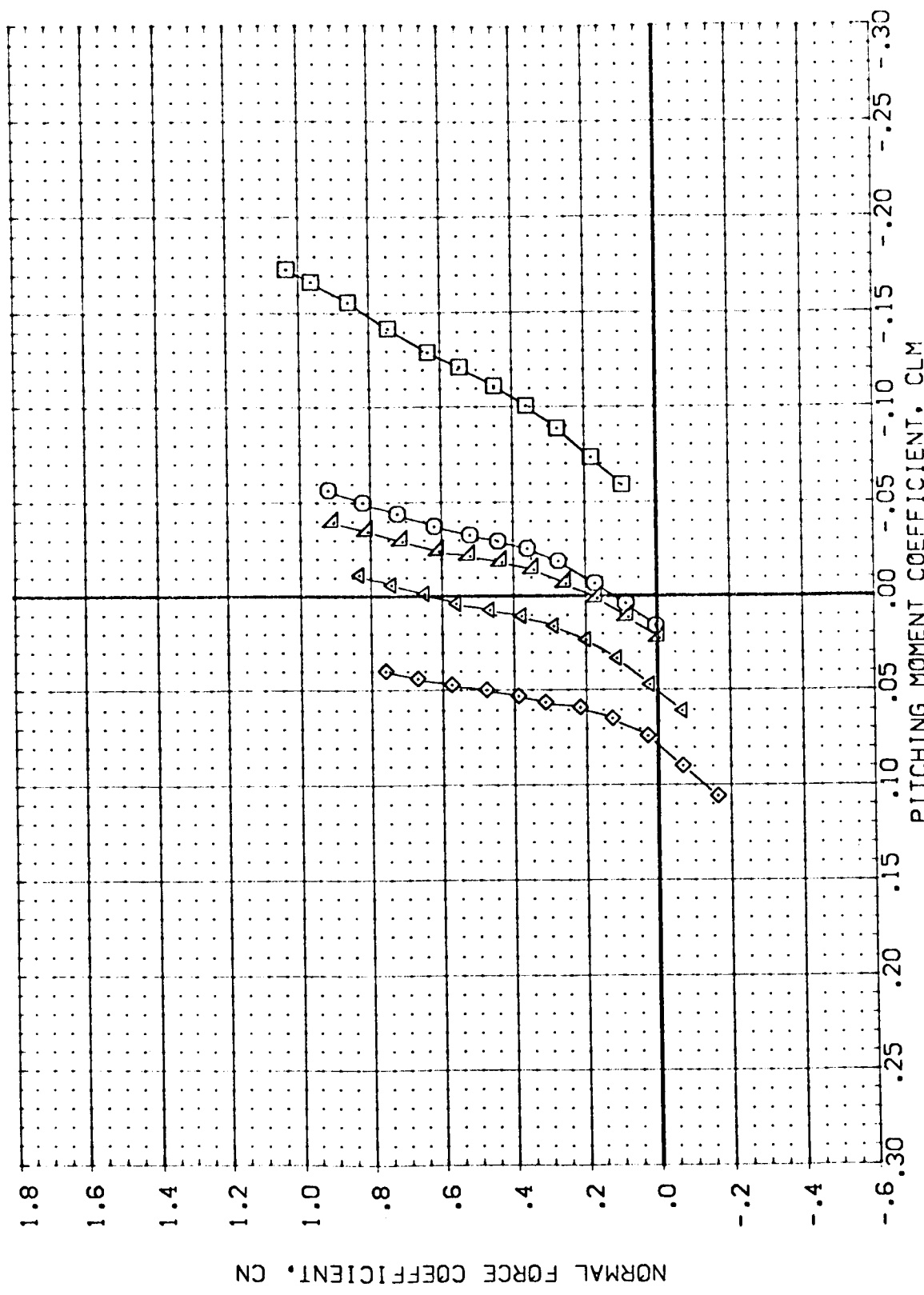


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (C) VACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SC.F. 2690.000
(F87538)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.000	REF 474.800
(F87542)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.000	REF 936.000
(F87540)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	REF 838.000
(F87544)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.000	REF 838.000
						SCALE .0040

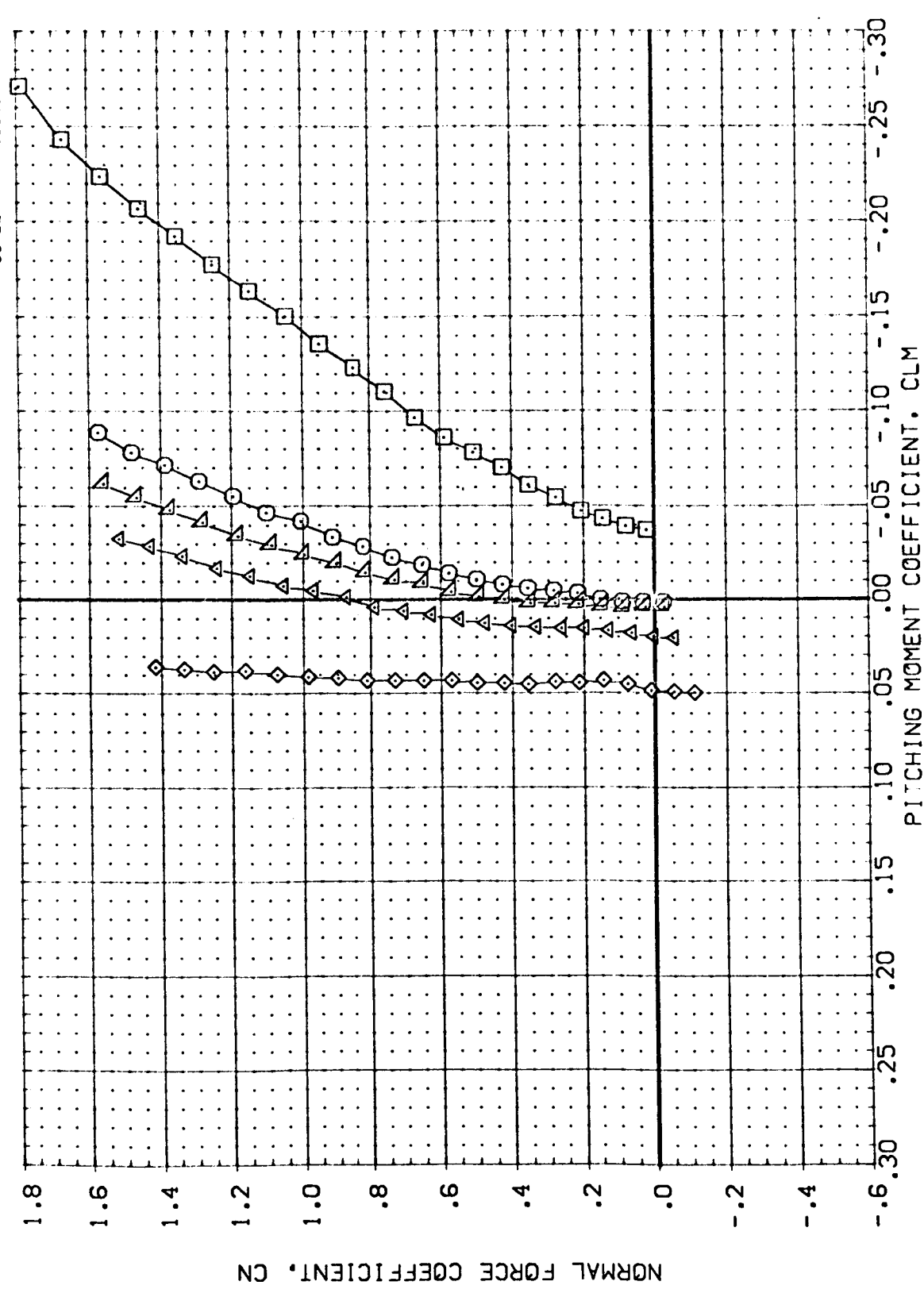


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (EJ)MACH = 2.99
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574 (CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	.000	SREF 2590.0000
(F87S38)	MSFC 574 (CA48) CRB 1398 V/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574 (CA48) CRB 1398 V/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S46)	MSFC 574 (CA48) CRB 1398 V/ALT NCSE	.000	-20.000	999.990	.000	XVREF 838.7000
(F87S44)	MSFC 574 (CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	-14.250	VREF .0000
						ZVREF .0000
						SCALE .0040

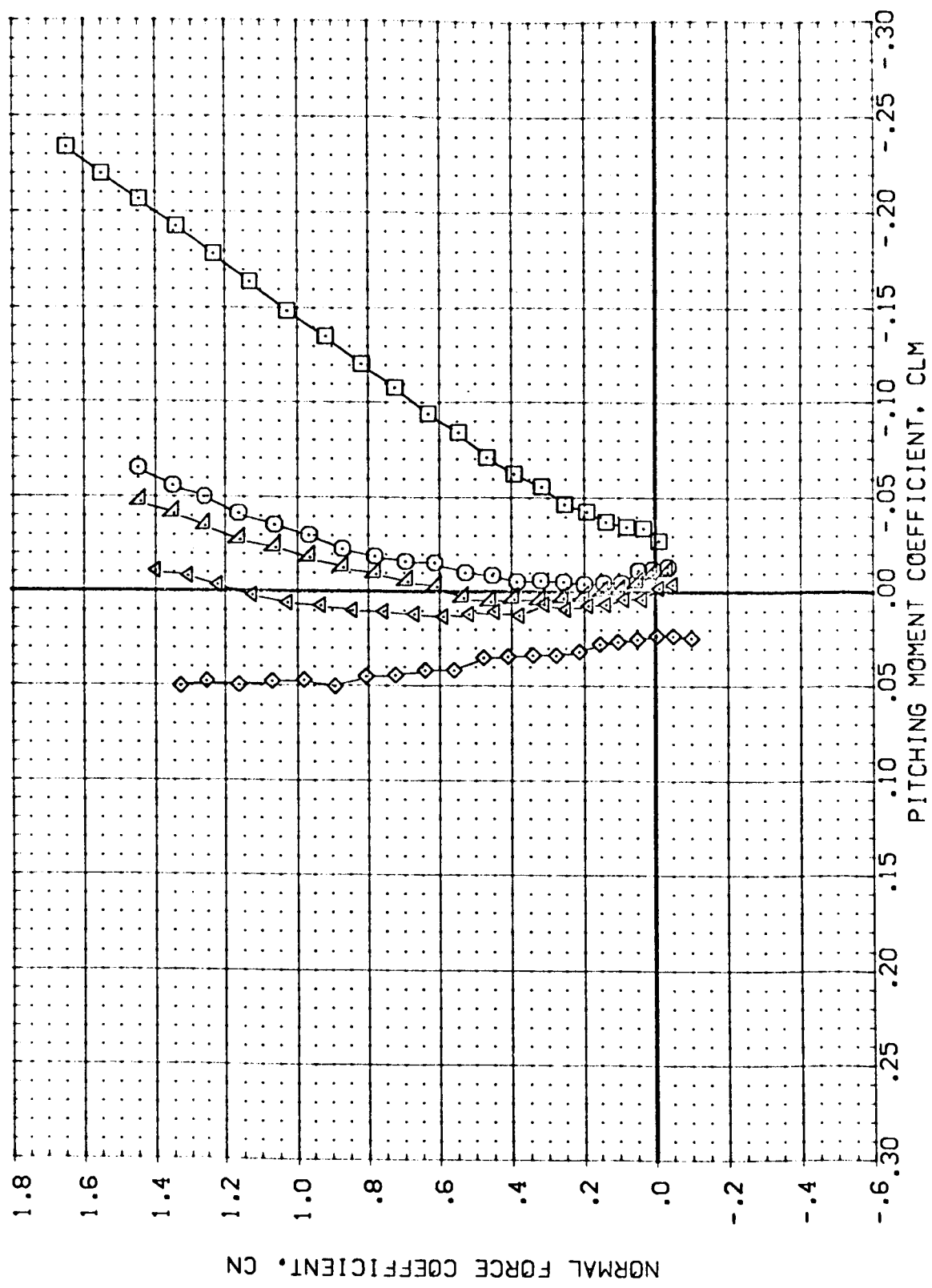


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (F) VACH = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	-14.250	BREF 536.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	.000	XWRP 0000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	-14.250	YWRP 0000
						ZWRP 0000
						SCALE .0040

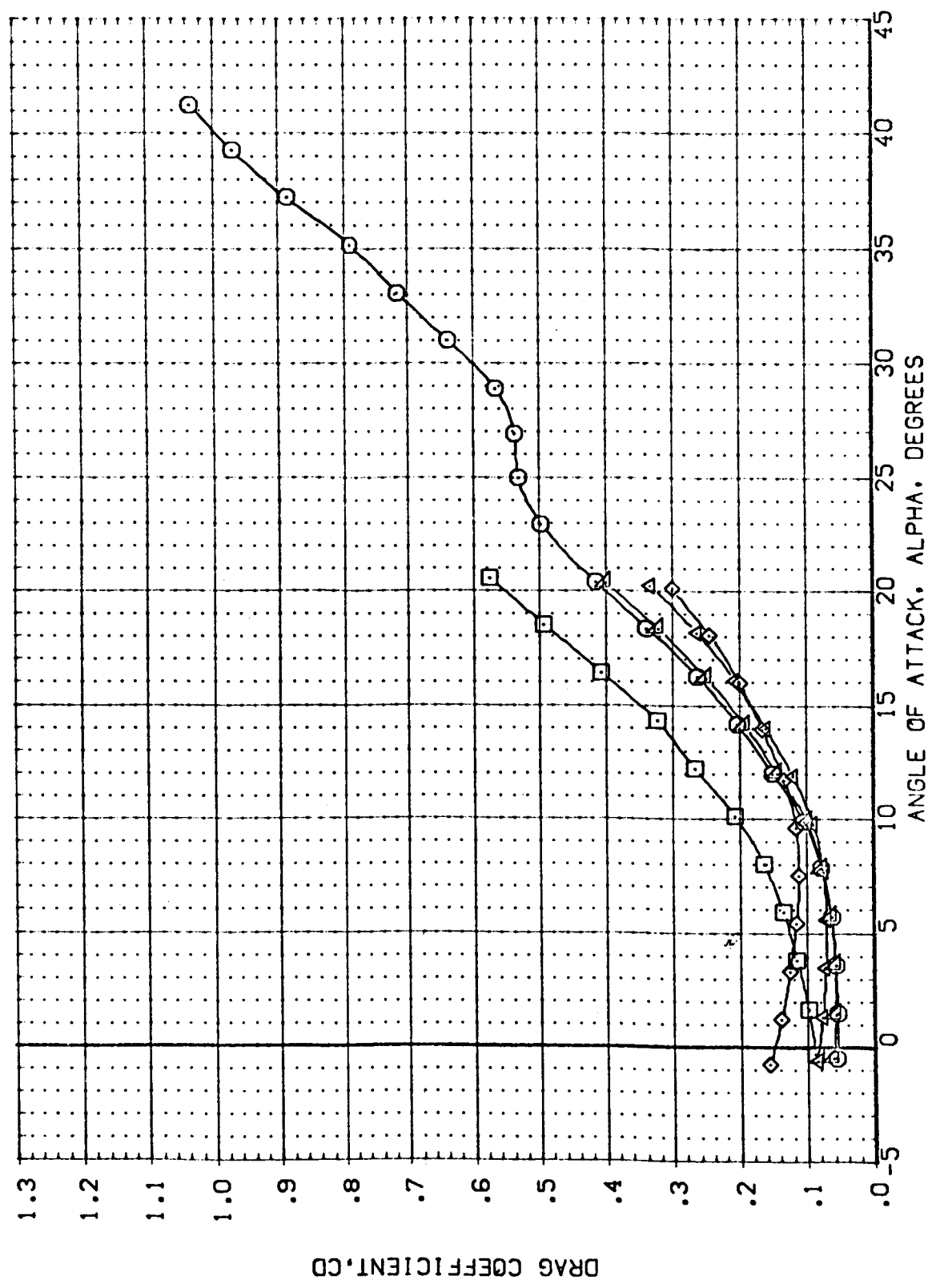


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (A) MACH = .6

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	SPEC 2690.0000 SC.F.
(F87538)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	REF 474.8000
(F87542)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	REF 936.7000
(F87540)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	XVBP 838.7000
(F87544)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	VVBP .0000
						ZVBP .0000
						SCALE .0040

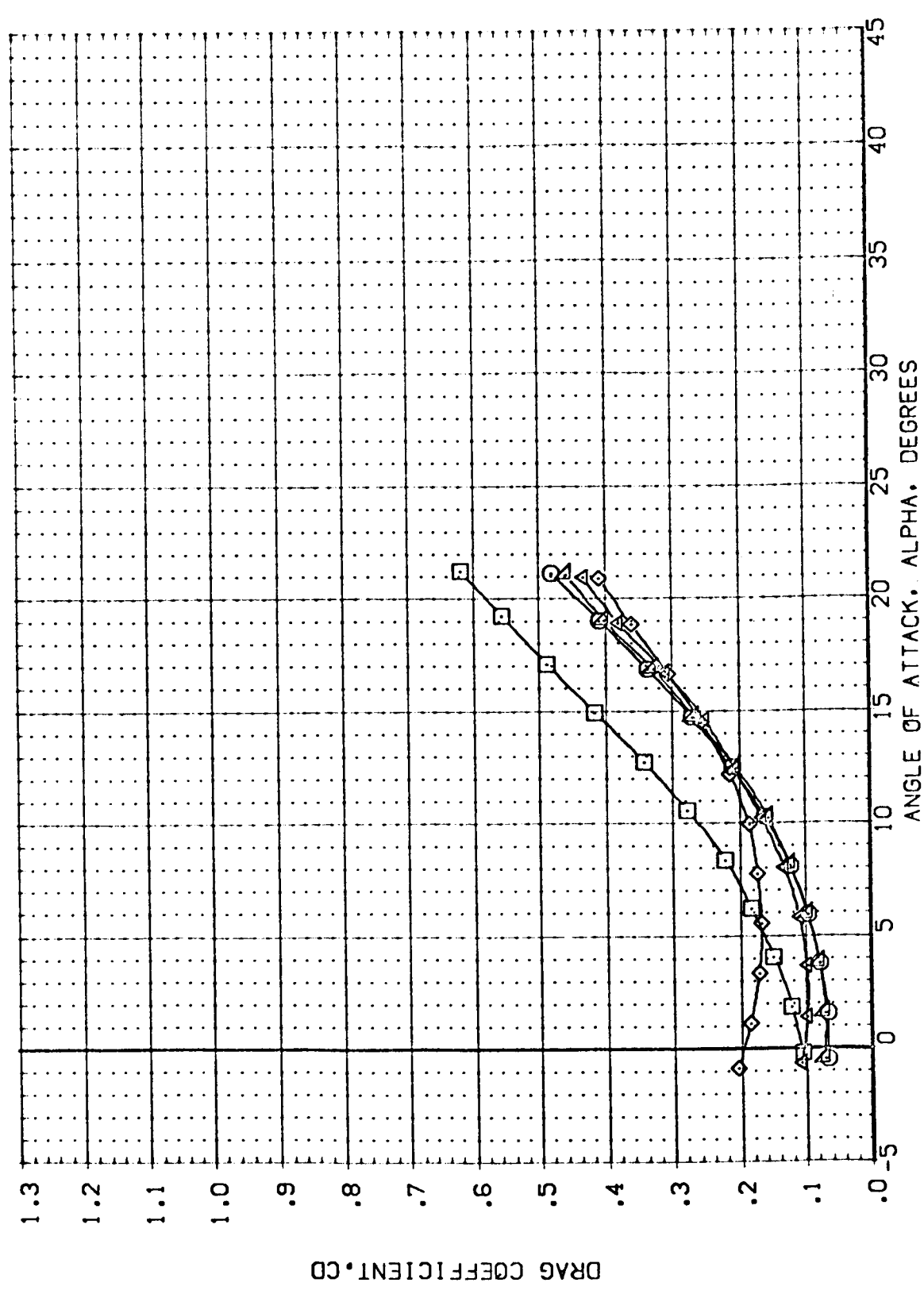


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B) VACH = .90
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	-40.000	999.990	-14.000	BREF 936.7000
(F87S40)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	.000	999.990	-14.750	YMRP .0000
						ZMRP .0000
						SCALE .0040

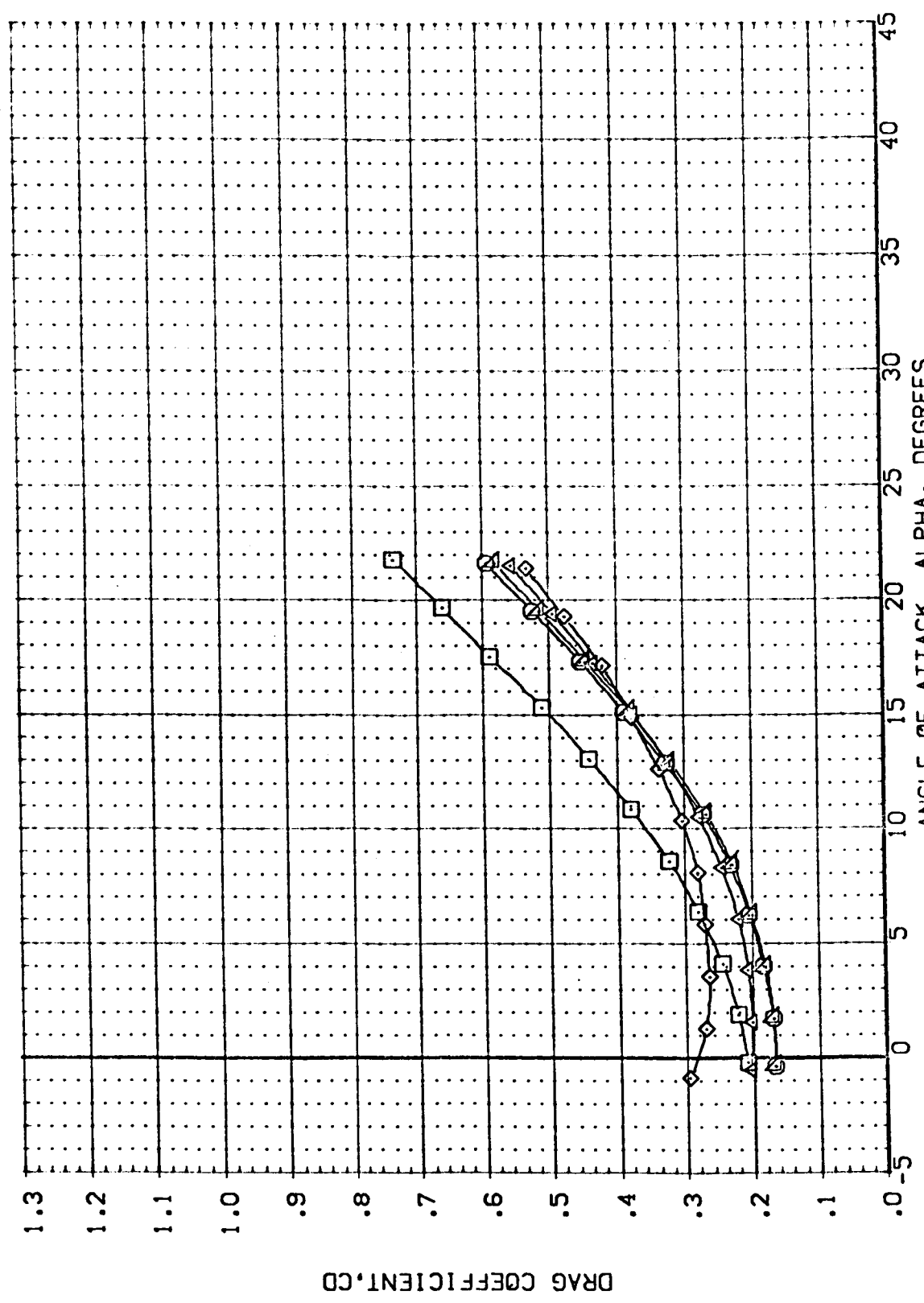


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.999	.000	2990.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	15.000	999.999	13.750	474.8000
(F87S12)	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	-40.000	999.999	-14.250	936.7000
(F87S40)	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	-20.000	999.999	.000	838.0000
(F87S44)	MSFC 574(CA48) CR3 139B W/ALT NOSE	.000	.000	999.999	-14.250	936.7000
					SCALE	0.000

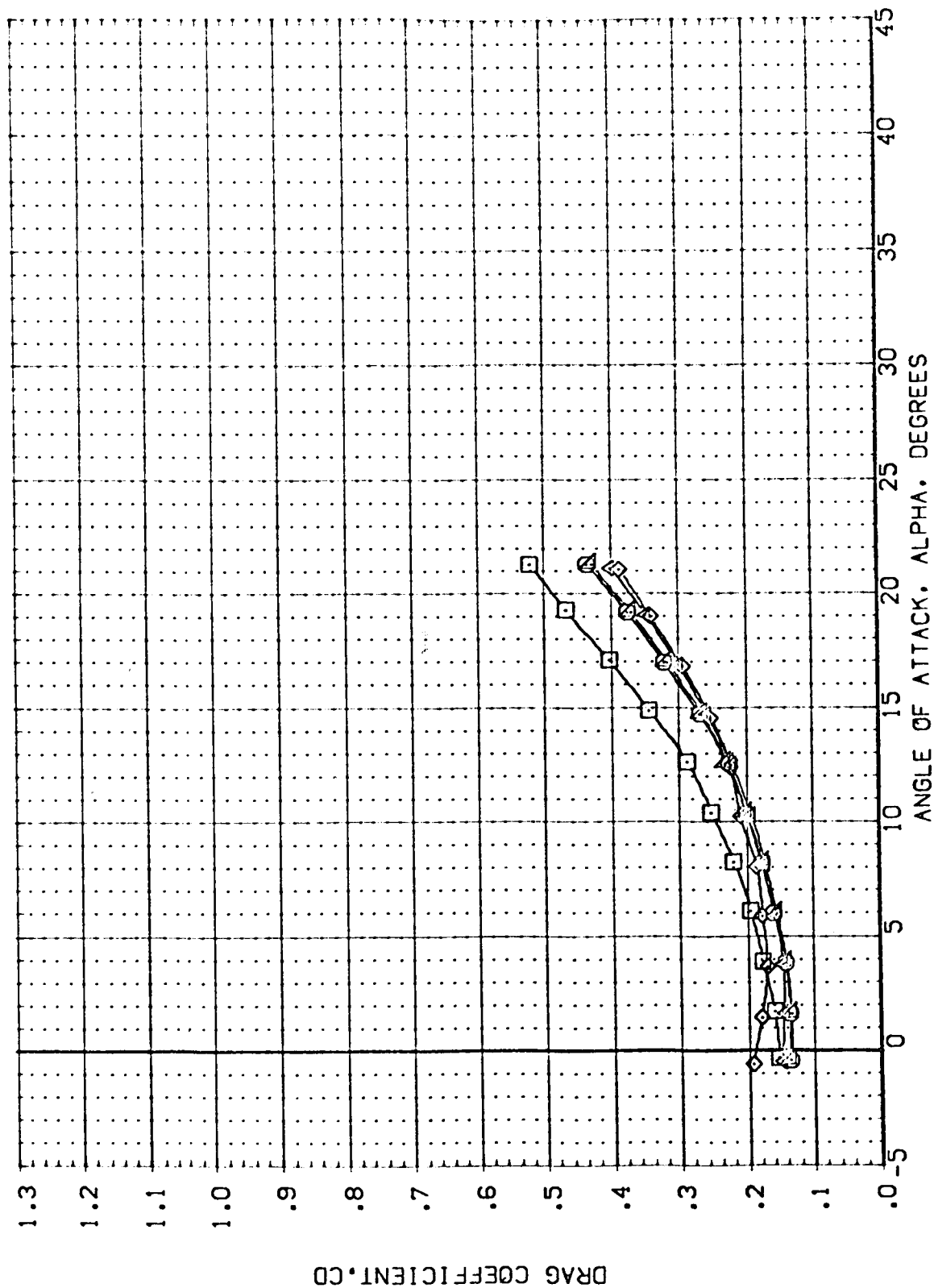


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

CD/MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	-40.000	999.990	-14.750	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	-14.750	YMRP .0000
						ZMRP .0000
						SCALE .0040

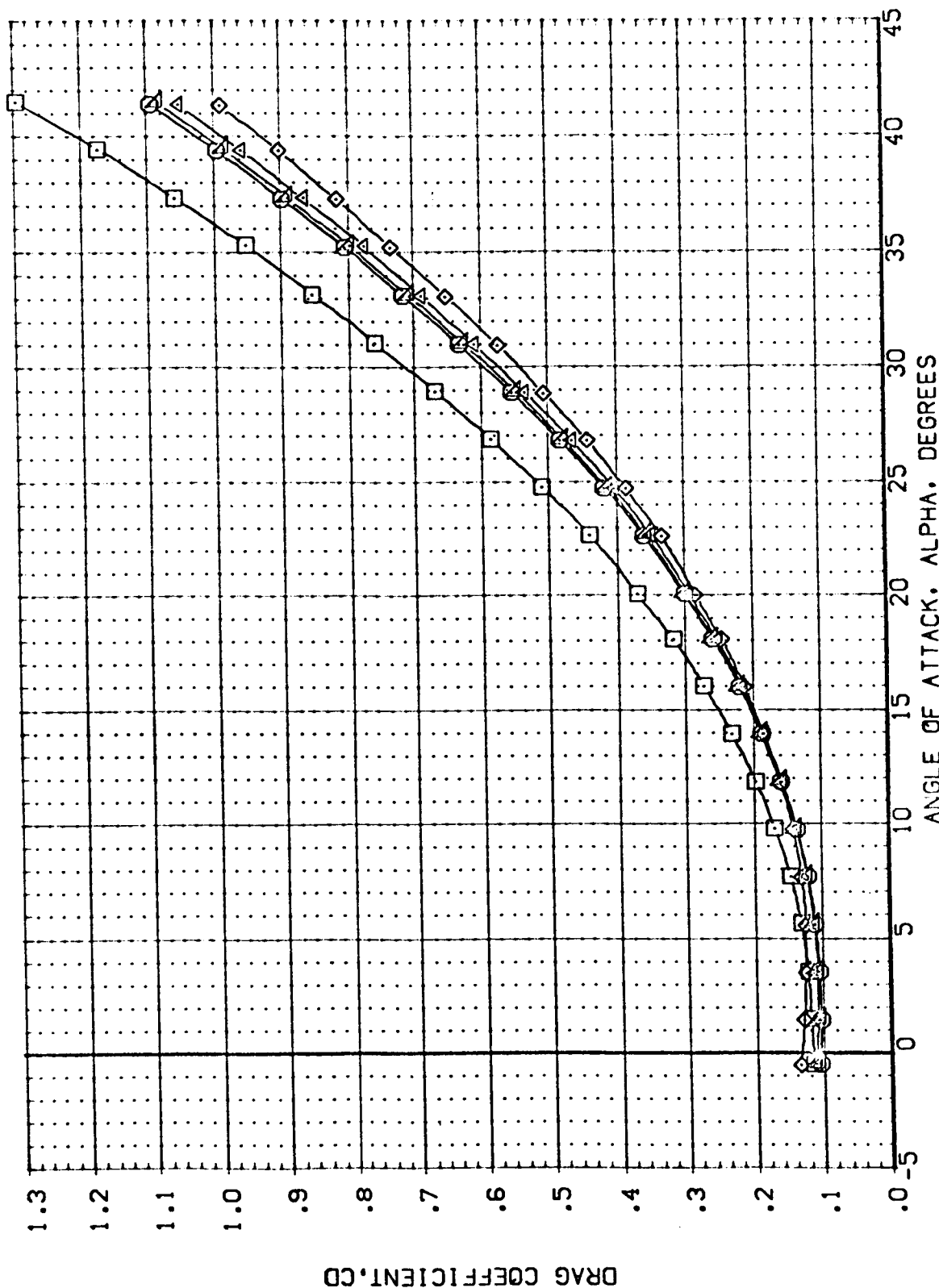


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NCSE

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPOILER	BOFLAP	REFERENCE INFORMATION	SCALE
(F87S31)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000	SC.FT.
(F87S38)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	13.750	LRP 474.8000	1/2
(F87S42)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	15.000	999.990	-14.250	BREF 938.7000	1/2
(F87S40)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-40.000	999.990	.000	XWRP 838.7000	1/2
(F87S44)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-20.000	999.990	-14.250	WWRP .0000	1/2
		.000	.000	999.990	.000	ZWRP .0000	1/2
		.000	.000	999.990	.000	SCALE .0040	

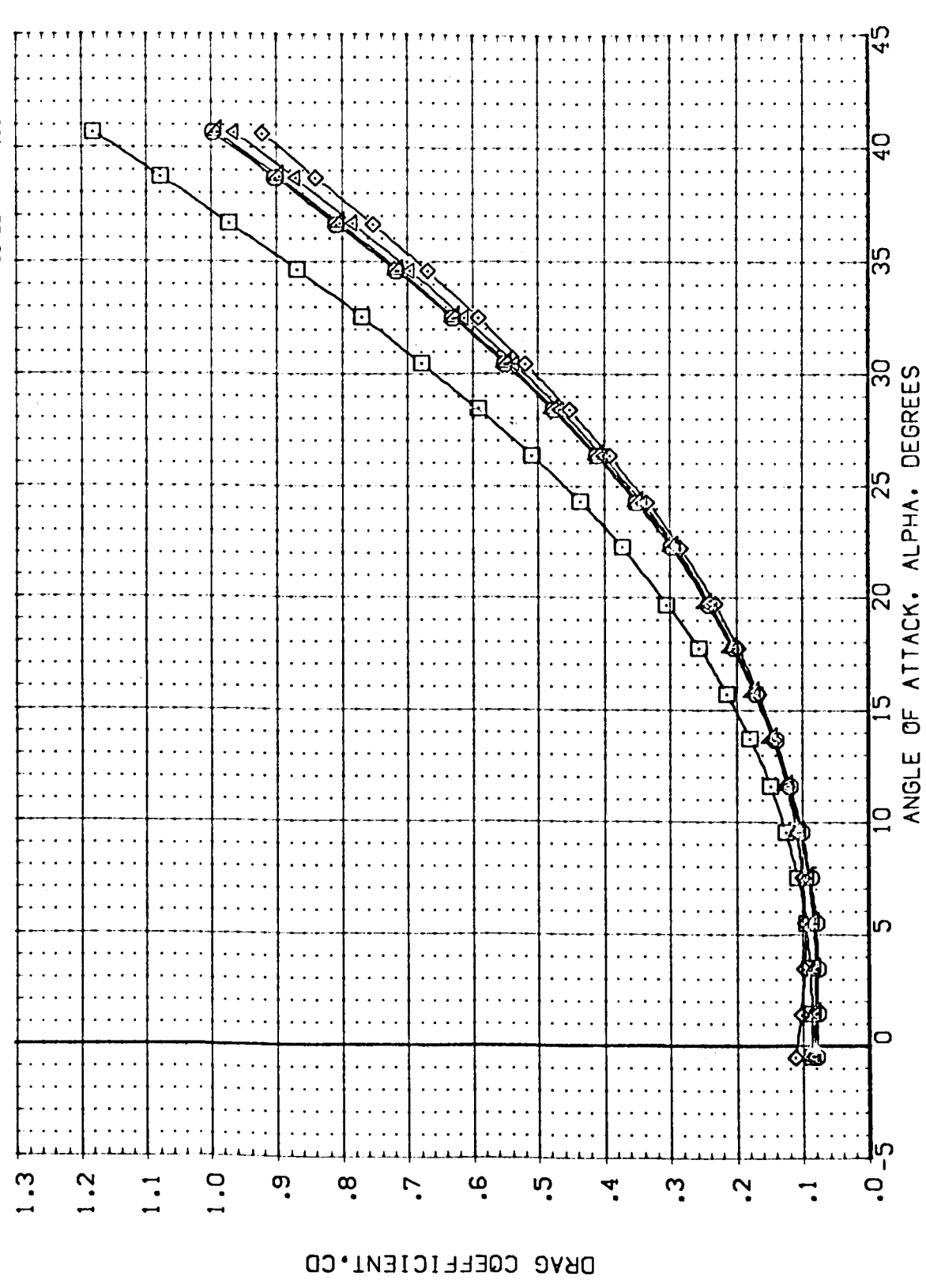


FIG. 15 - EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690 0000 SC.FT.
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-15.000	999.990	-14.250	BREF 939.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XVREF 839.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	ZVREF 000000
						SCALE 0000

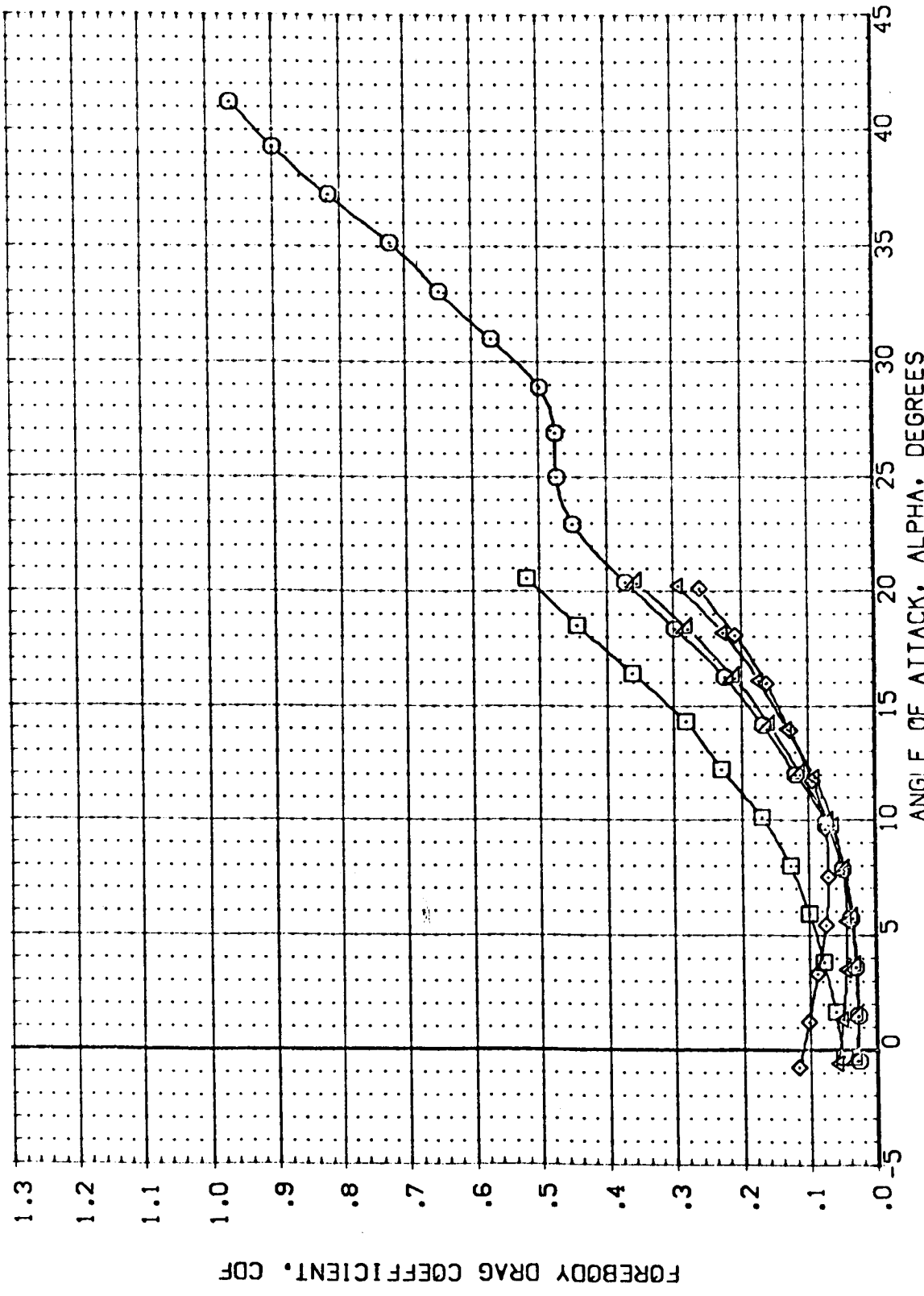


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	WSC 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SCALE
(F87S36)	WSC 574(CA48) CRB 139B W/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	WSC 574(CA48) CRB 139B W/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S43)	WSC 574(CA48) CRB 139B W/ALT NOISE	.000	-20.000	999.990	.000	XVAP 838.7000
(F87S44)	WSC 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	-14.750	YVAP .0000
						ZVAP .0000
						SCALE .0040

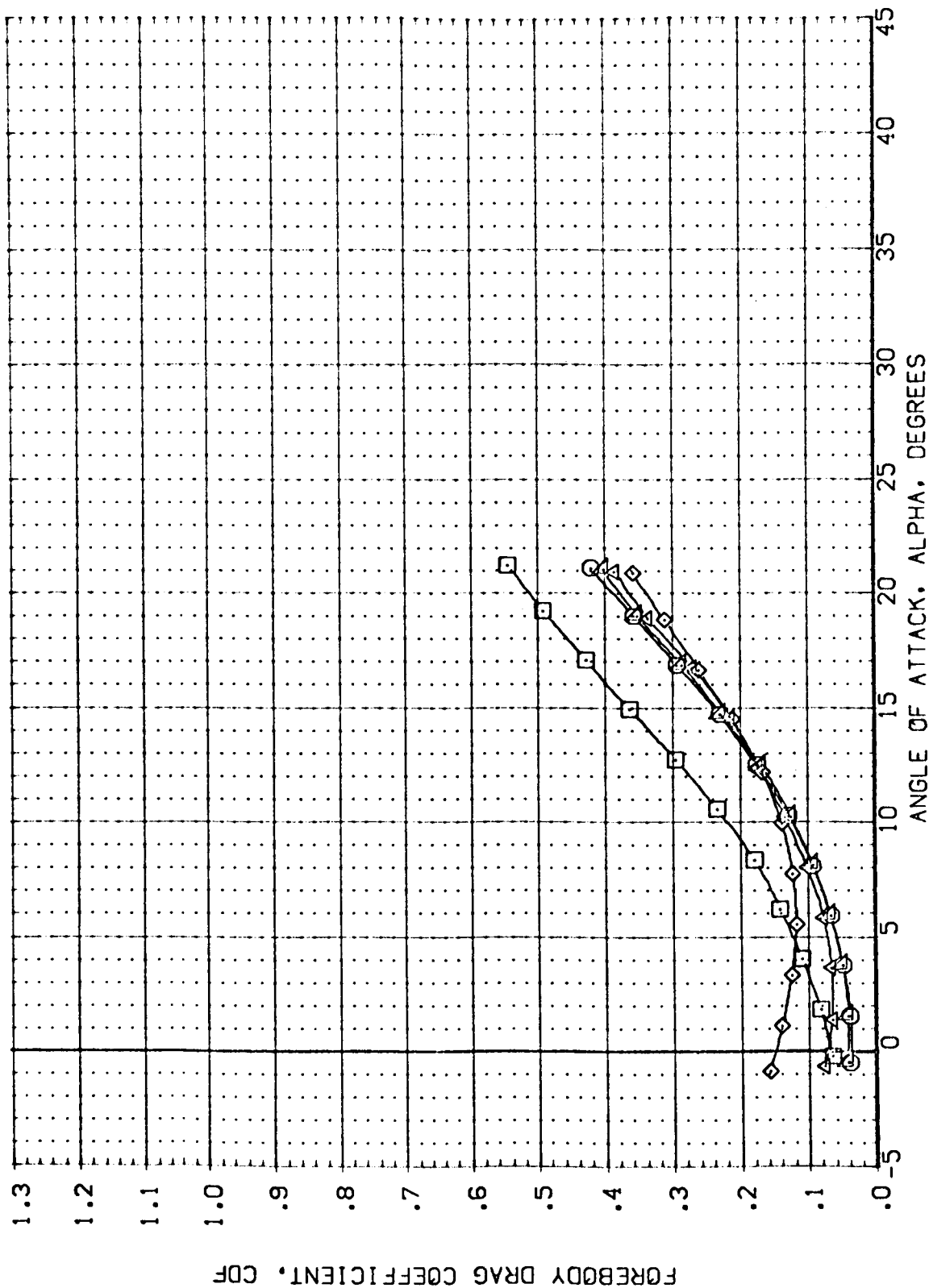


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE

(B)VACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDF LAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) CRB 139B W/ALT NOISE	.000	.000	999.990	.000	SRCF 2690.0000
(F87S38)	MSFC 574(OA48) CRB 139B W/ALT NOISE	.000	15.000	999.990	13.750	REF 474.8000
(F87S42)	MSFC 574(OA48) CRB 139B W/ALT NOISE	.000	-40.000	999.990	-14.250	REF 936.7000
(F87S40)	MSFC 574(OA48) CRB 139B W/ALT NOISE	.000	-20.000	999.990	.000	XPRP 838.7000
(F87S44)	MSFC 574(OA48) CRB 139B W/ALT NOISE	.000	.000	999.990	-14.000	VPRP .0000
						ZPRP .0000
						SCALE .0040

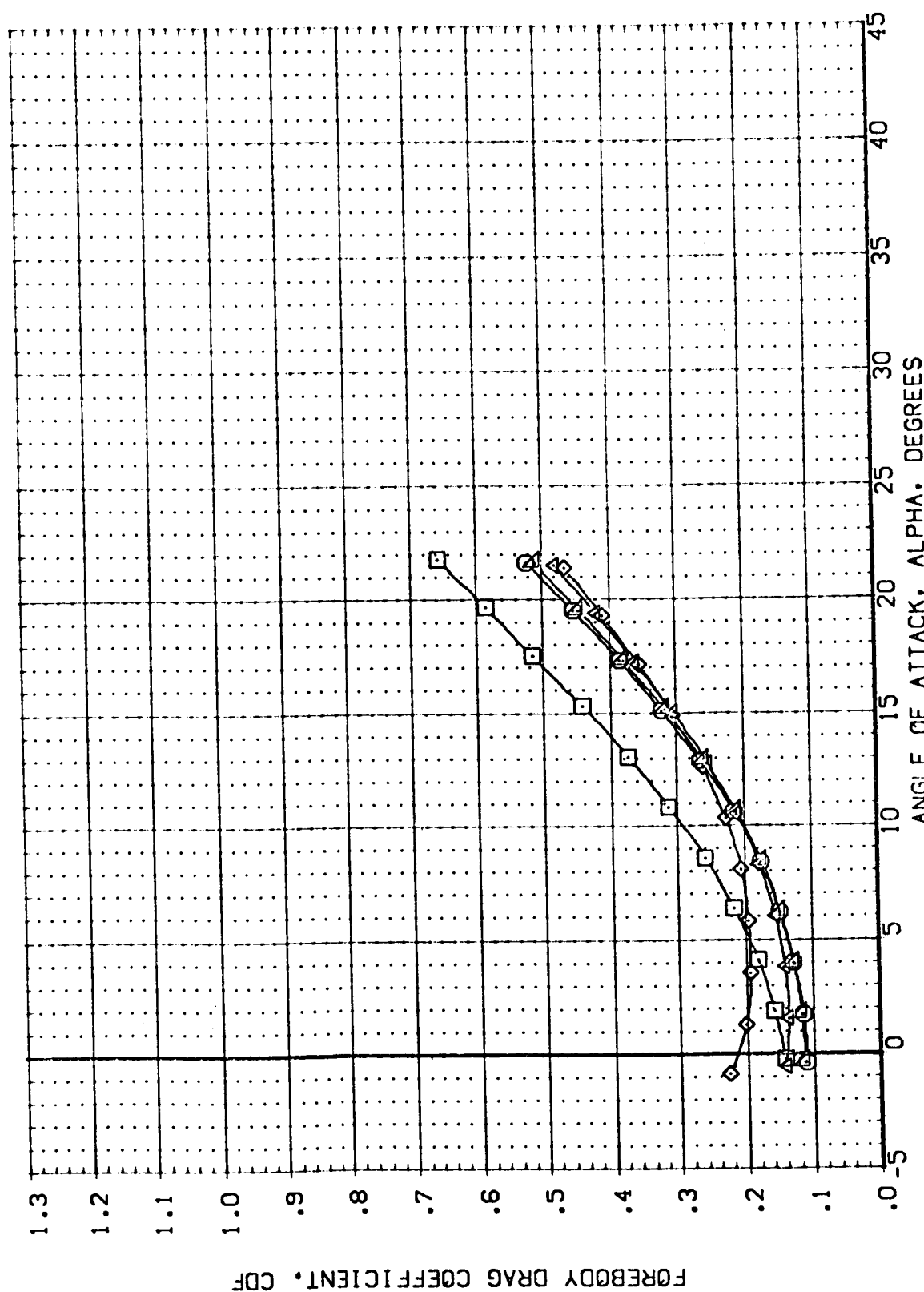


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	W5C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S36)	W5C 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.0000
(F87S42)	W5C 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	W5C 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	XVRP 838.0000
(F87S44)	W5C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	YVRP .0000
						ZVRP .0000
						SCALE .0040

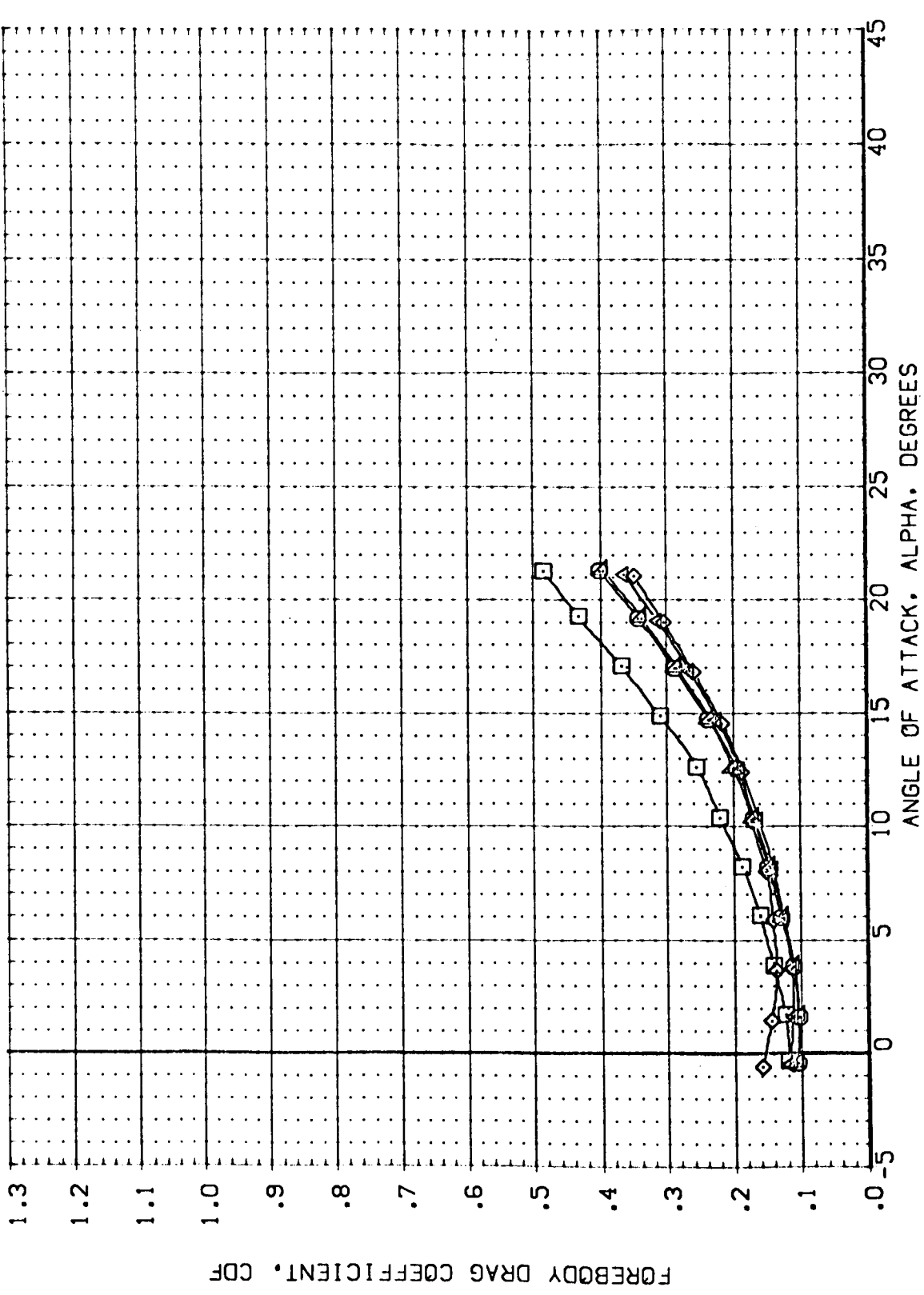


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SRCE 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	15.000	999.990	.000	SRCE 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-40.000	999.990	.000	SRCE 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-20.000	999.990	.000	SRCE 838.7000
(F87S44)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SRCE 838.7000
						SCALE

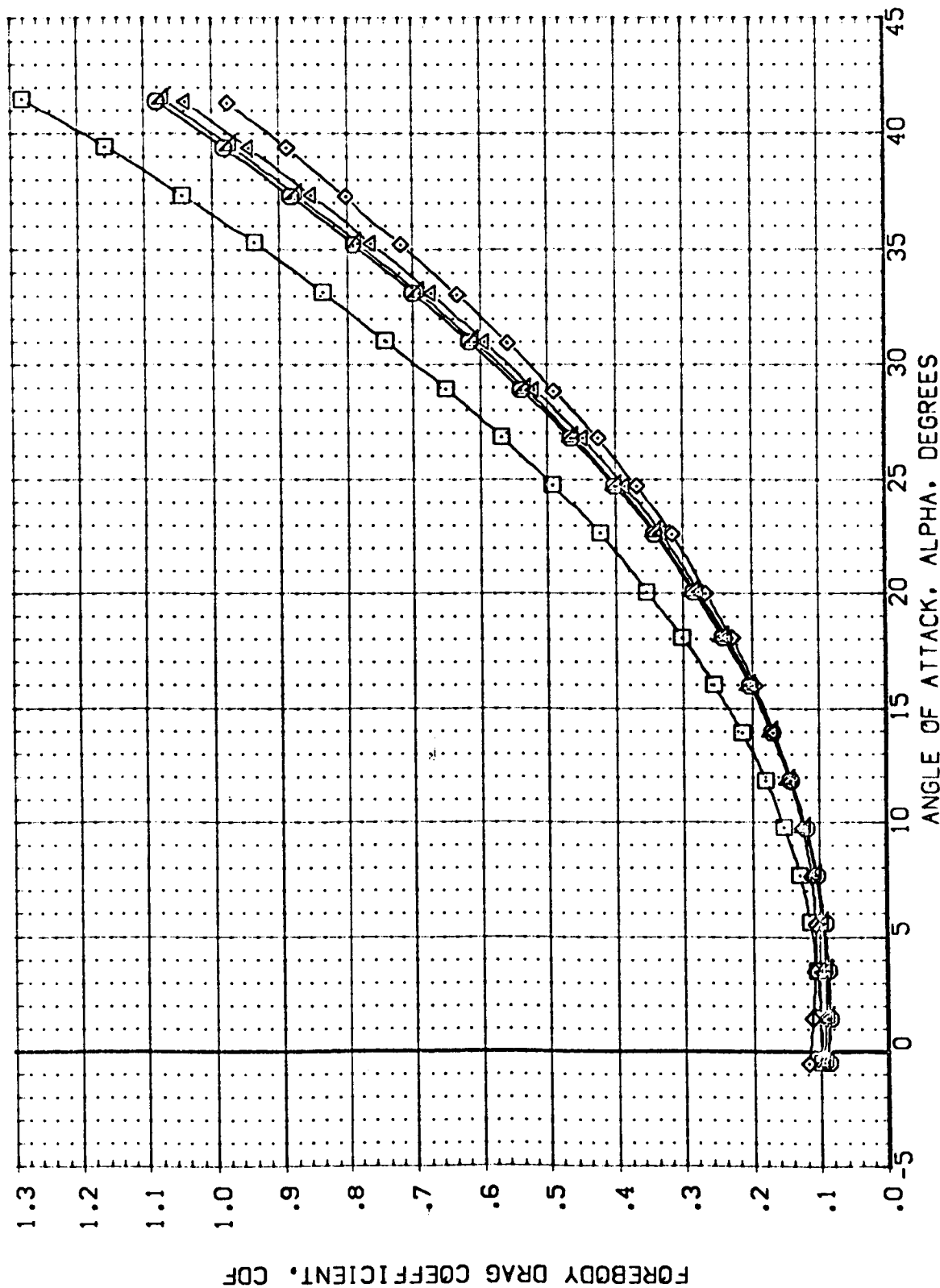


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 39B W/ALT NOSE	.000	15.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 39B W/ALT NOSE	.000	-40.000	999.990	.000	XMRP 838.0000
(F87S44)	MSFC 574(CA48) CRB 39B W/ALT NOSE	.000	-20.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

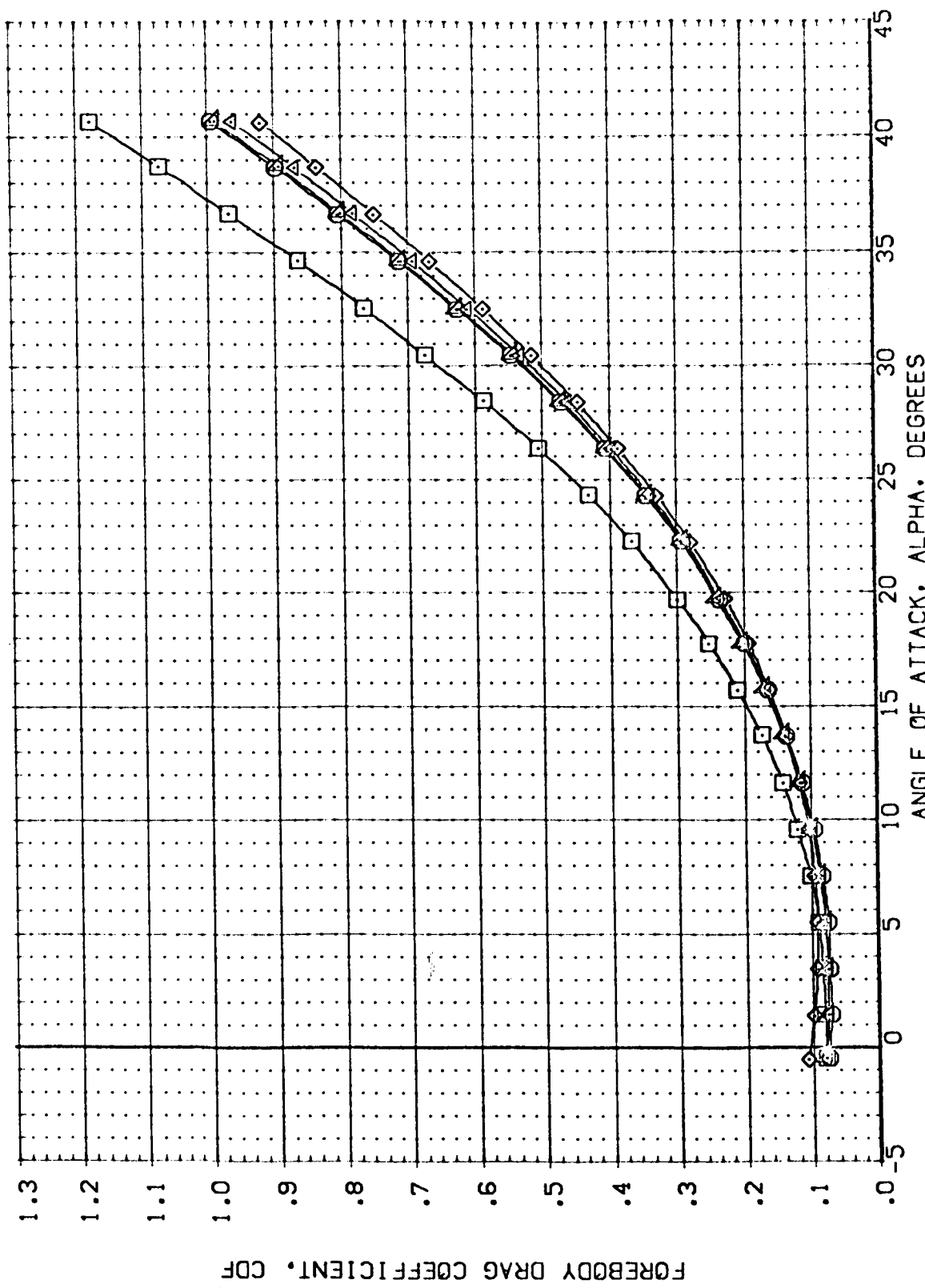


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (F)MACH = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDRK	BDFAP	REFERENCE INFORMATION	SO.F.
(F87S31)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	2690.0000	.0000
(F87S38)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	474.8000	.0000
(F87S42)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	936.7000	.0000
(F87S40)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	838.7000	.0000
(F87S44)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	.0000	.0000
					SCALE	.0040	

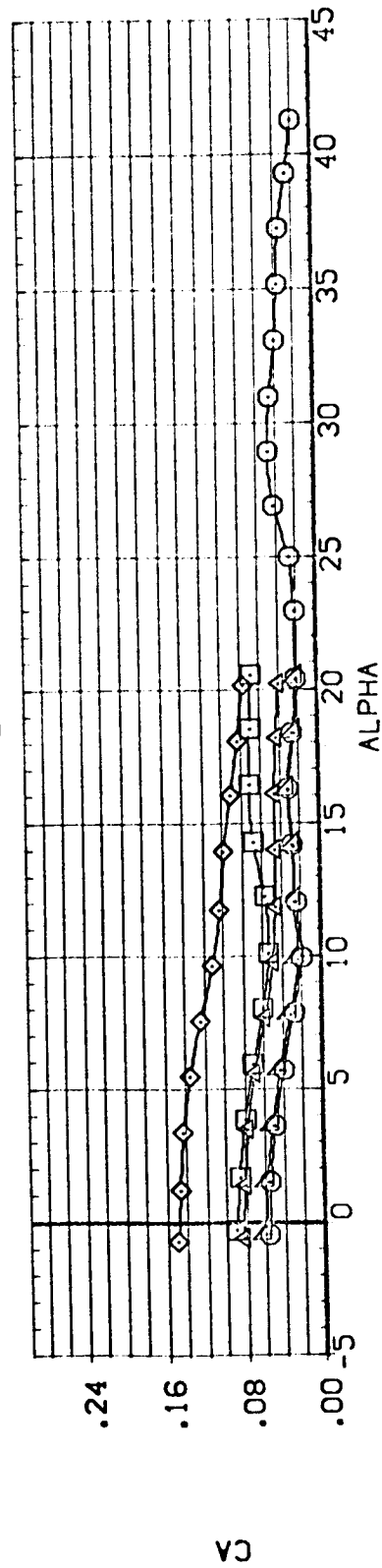
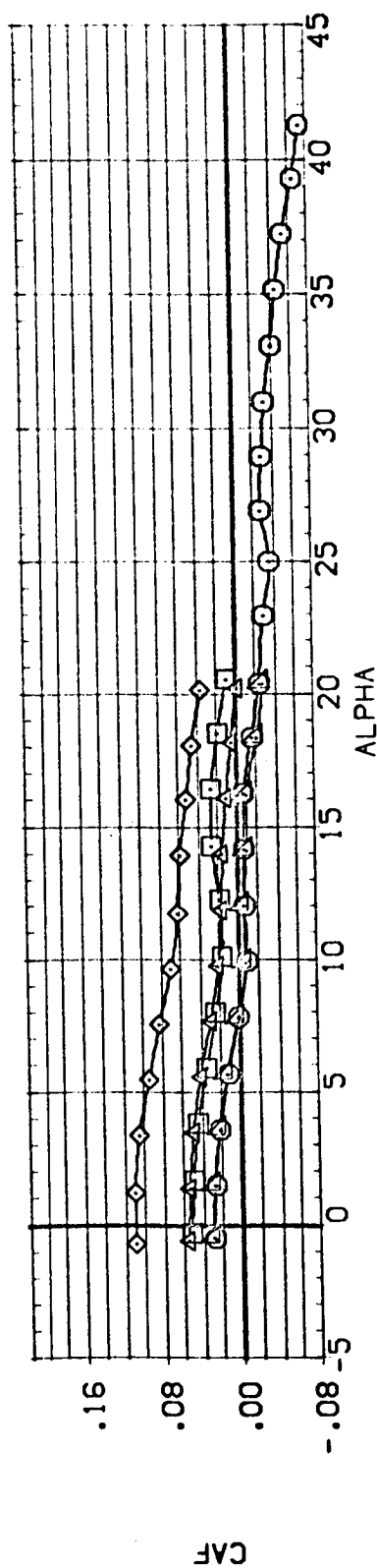
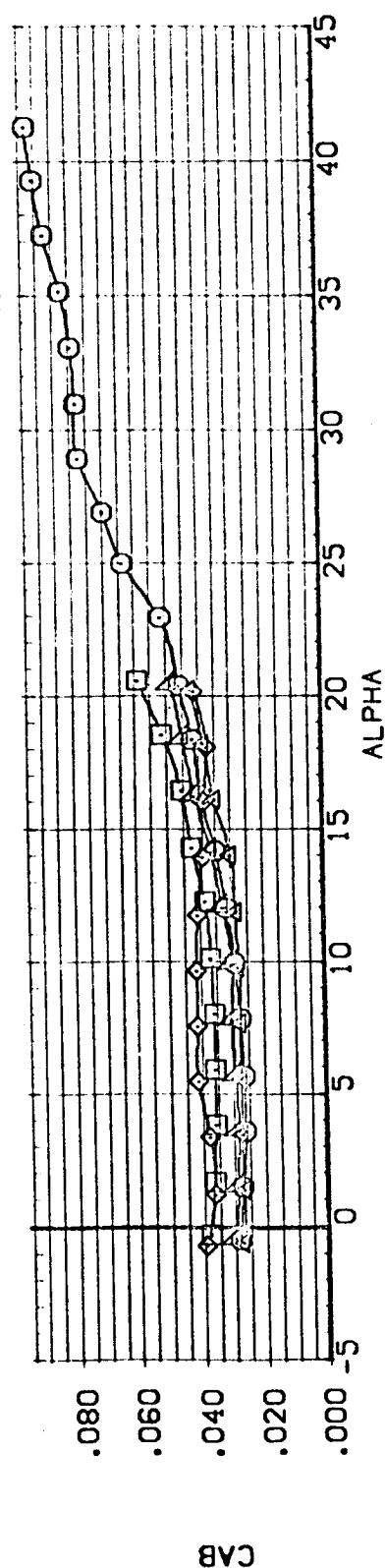


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE (A) VACH = .6;

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	SPCF	REF	SCALE
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	.000	2690.0000	SC.F.T.	1.000
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	13.7500	474.8000		1.000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	-14.2500	536.7000		1.000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	.000	838.0000		1.000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	-14.2500	838.0000		1.000
						7439		1.000
						SCALE		1.000

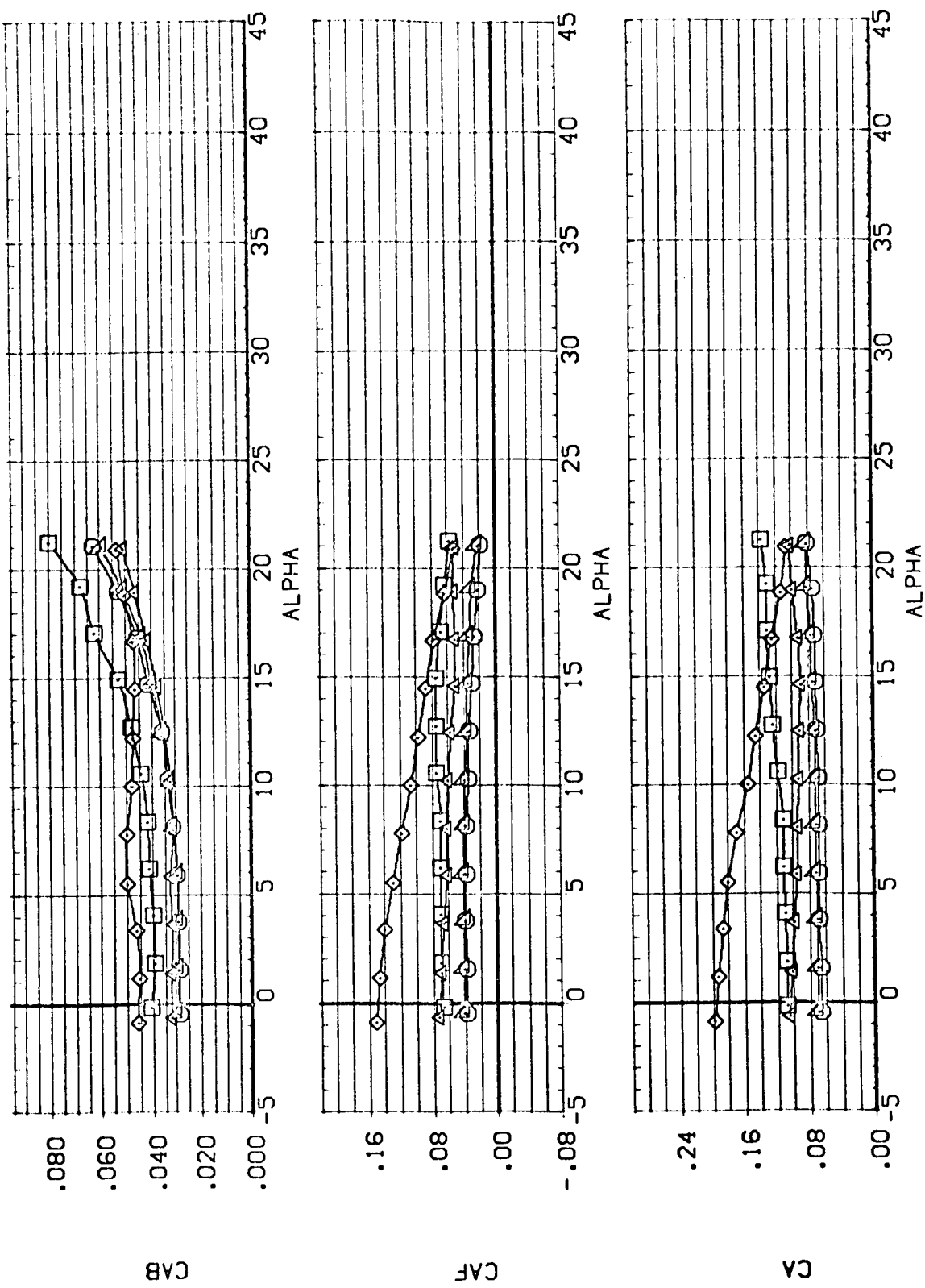
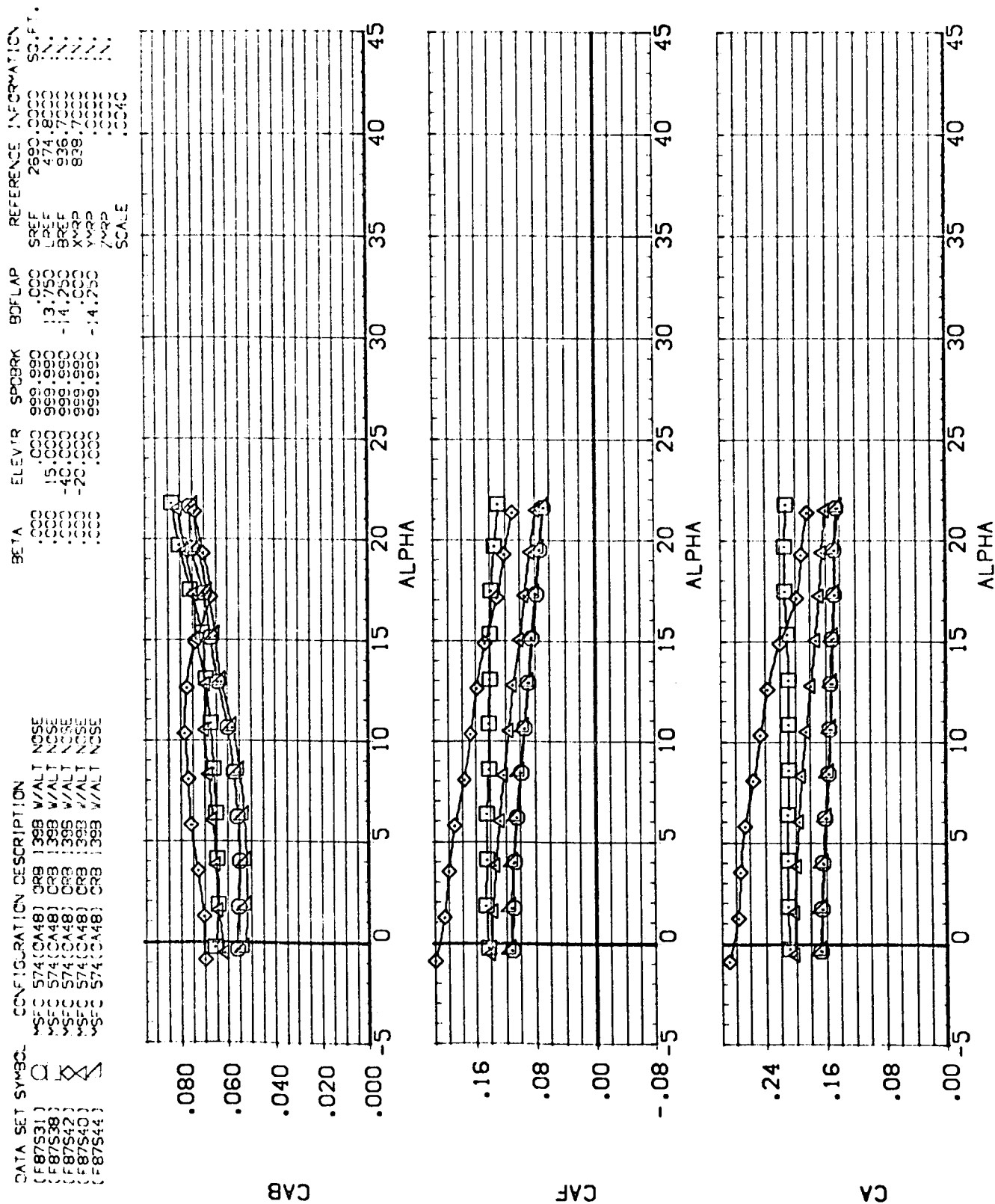


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
(3)MACH = .90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	13.750	REF 474.8000
(F87S42)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	-14.200	REF 938.7000
(F87S40)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	.000	REF 838.7000
(F87S44)	MSFC 574(CA48) CR3 393 V/ALT NOSE	.000	.000	999.990	-14.200	REF 938.7000
						SCALE .0000
						SCALE .0040

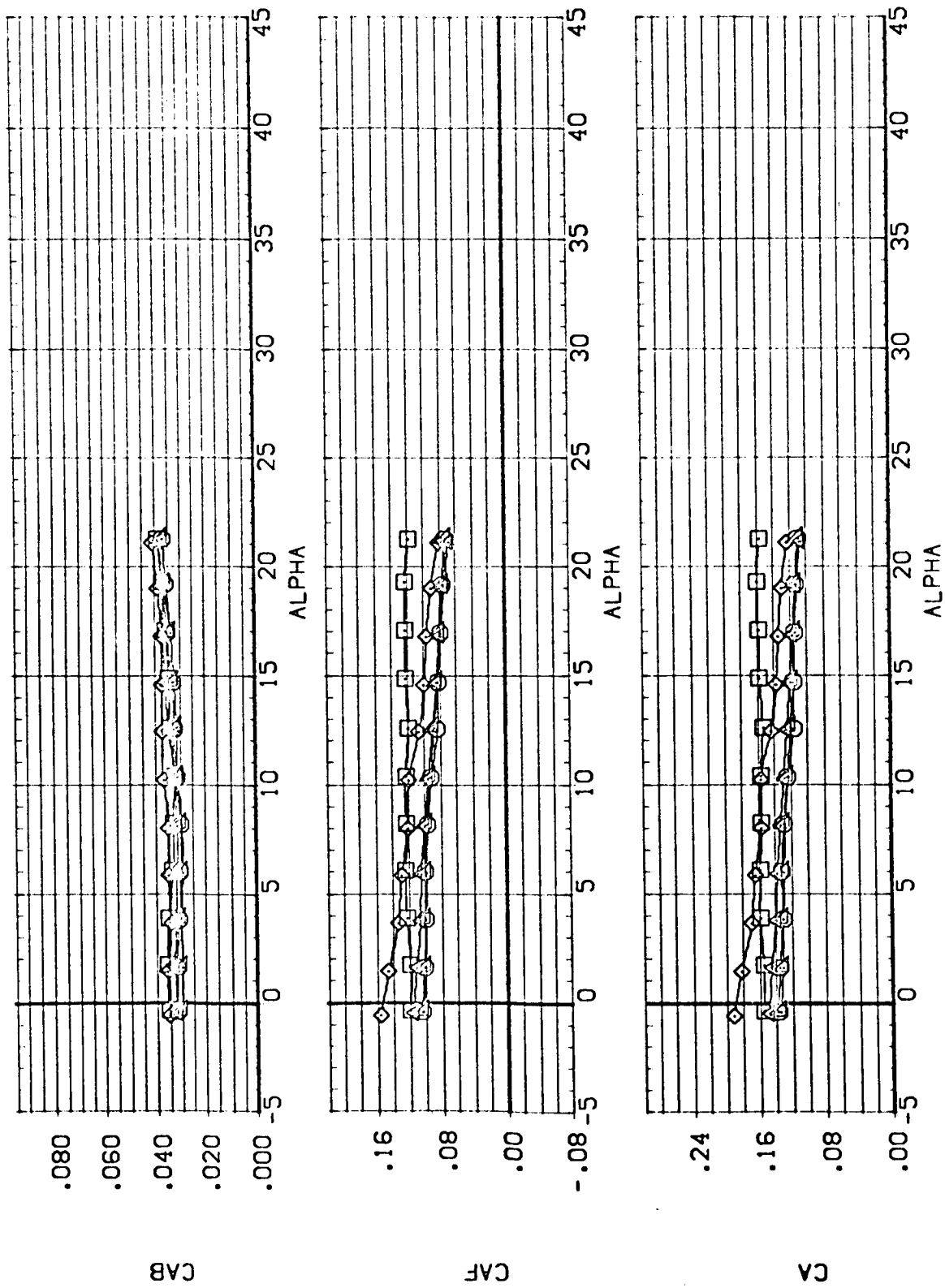


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (D) VACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690
(F87S32)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	LRREF 474
(F87S33)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	BRREF 938
(F87S34)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S35)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S36)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S37)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S38)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S39)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S40)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S41)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S42)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S43)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838
(F87S44)	MSFC 574 (CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	YMRB 838

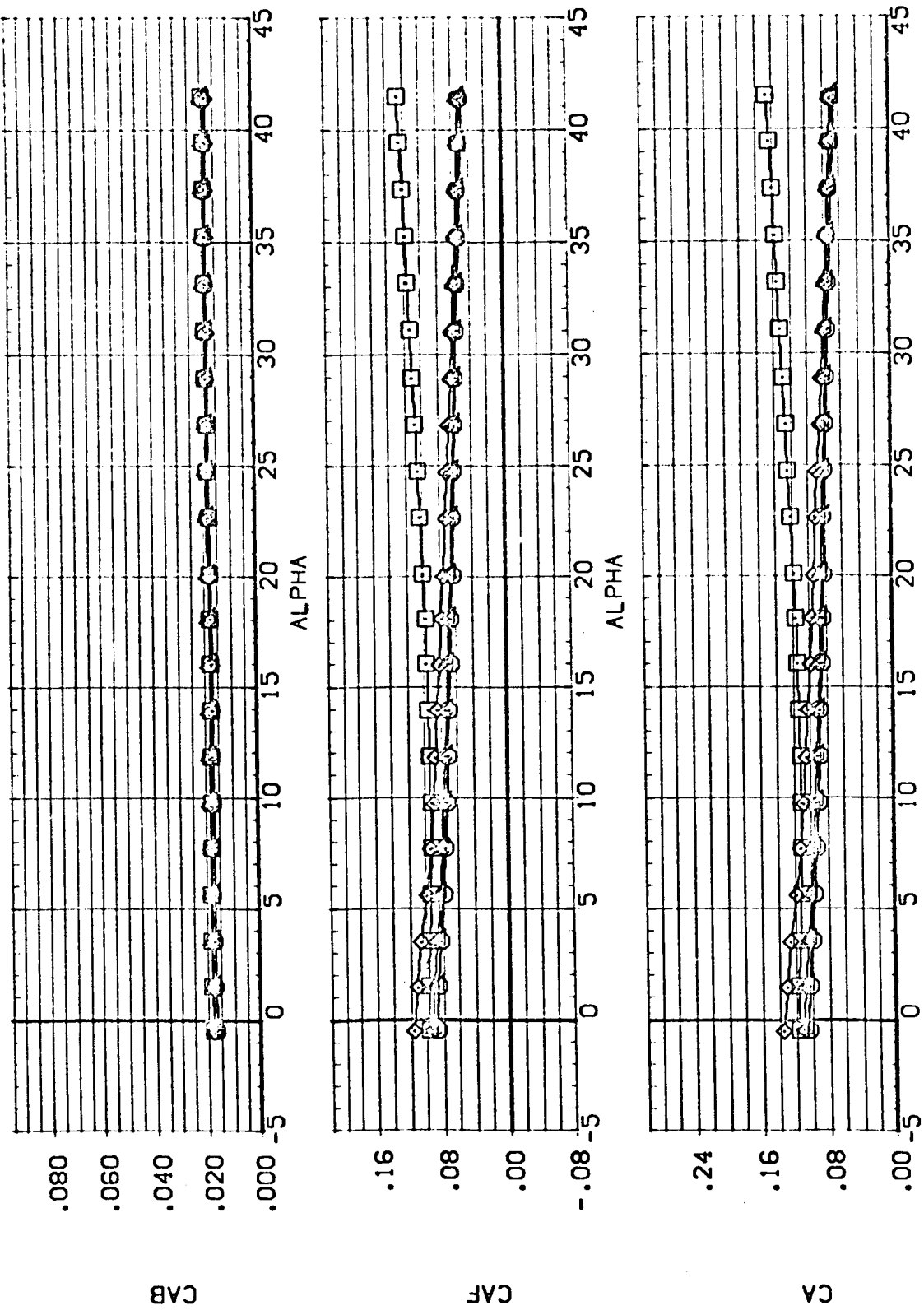


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SPCF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	.000	SPCF 474.0000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-13.750	SPCF 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	-14.000	SPCF 838.0000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.000	SPCF 1000.0000

SCALE 100%

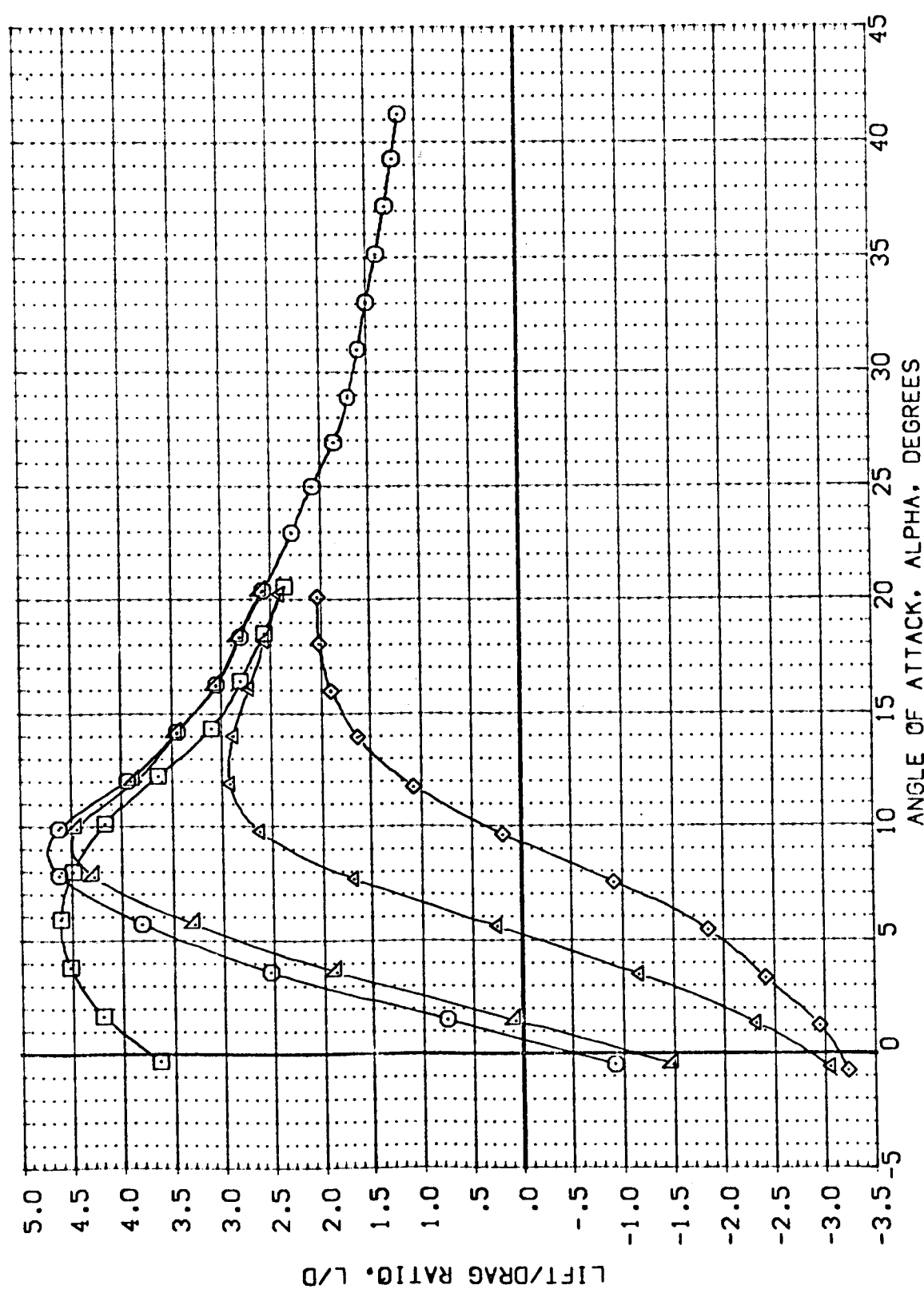


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SC.F.T.
(F87531)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(F87538)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	15.000	999.990	13.750	REF	474.8000
(F87542)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BRFF	536.7000
(F87543)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP	838.0000
(F87544)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	.000	999.990	-14.250	XMRP	.0000
						ZMRP	.0000
						SCALE	.0040

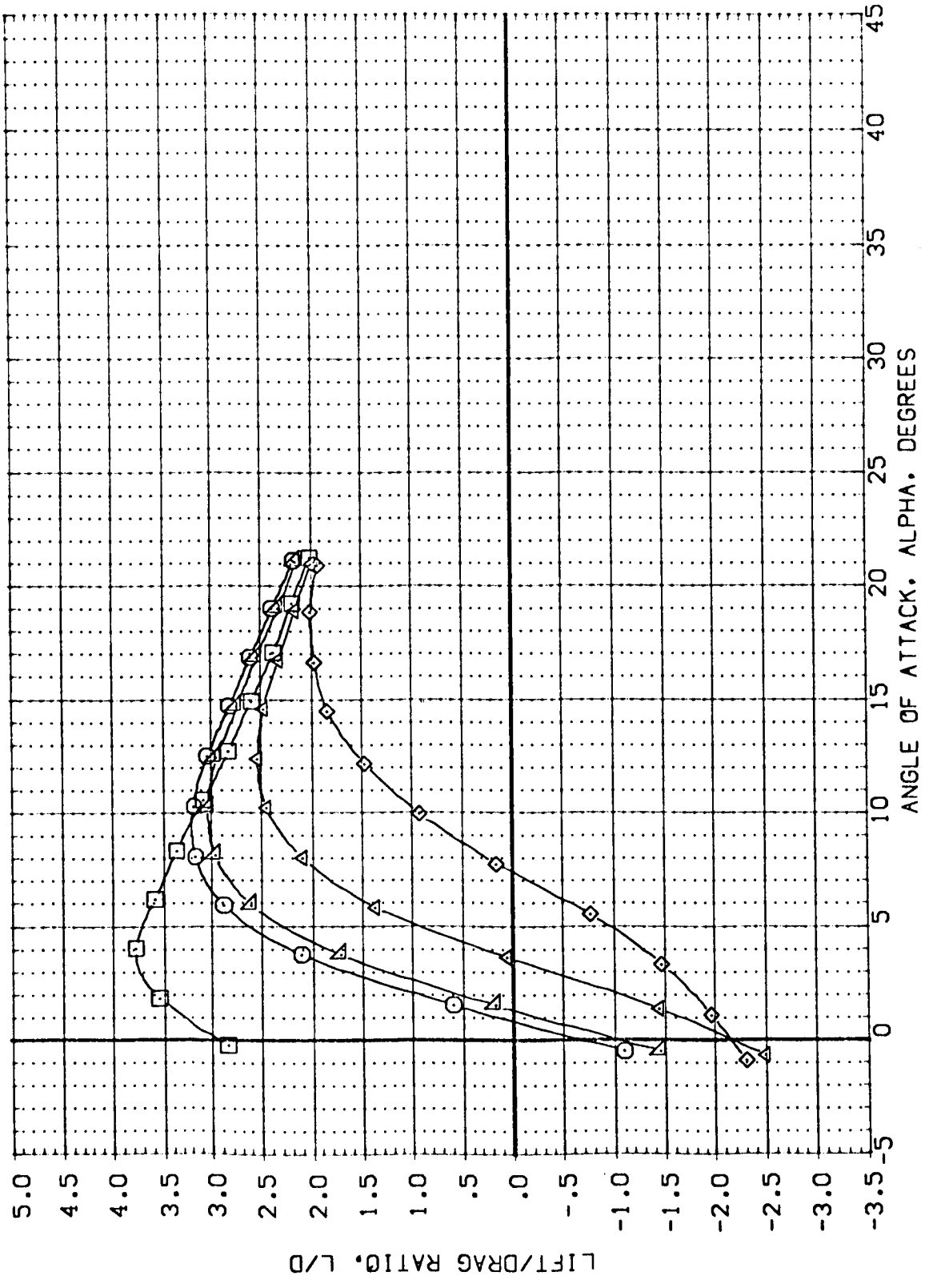


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPORCK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
					ZMRP .0000	SCALE .0040

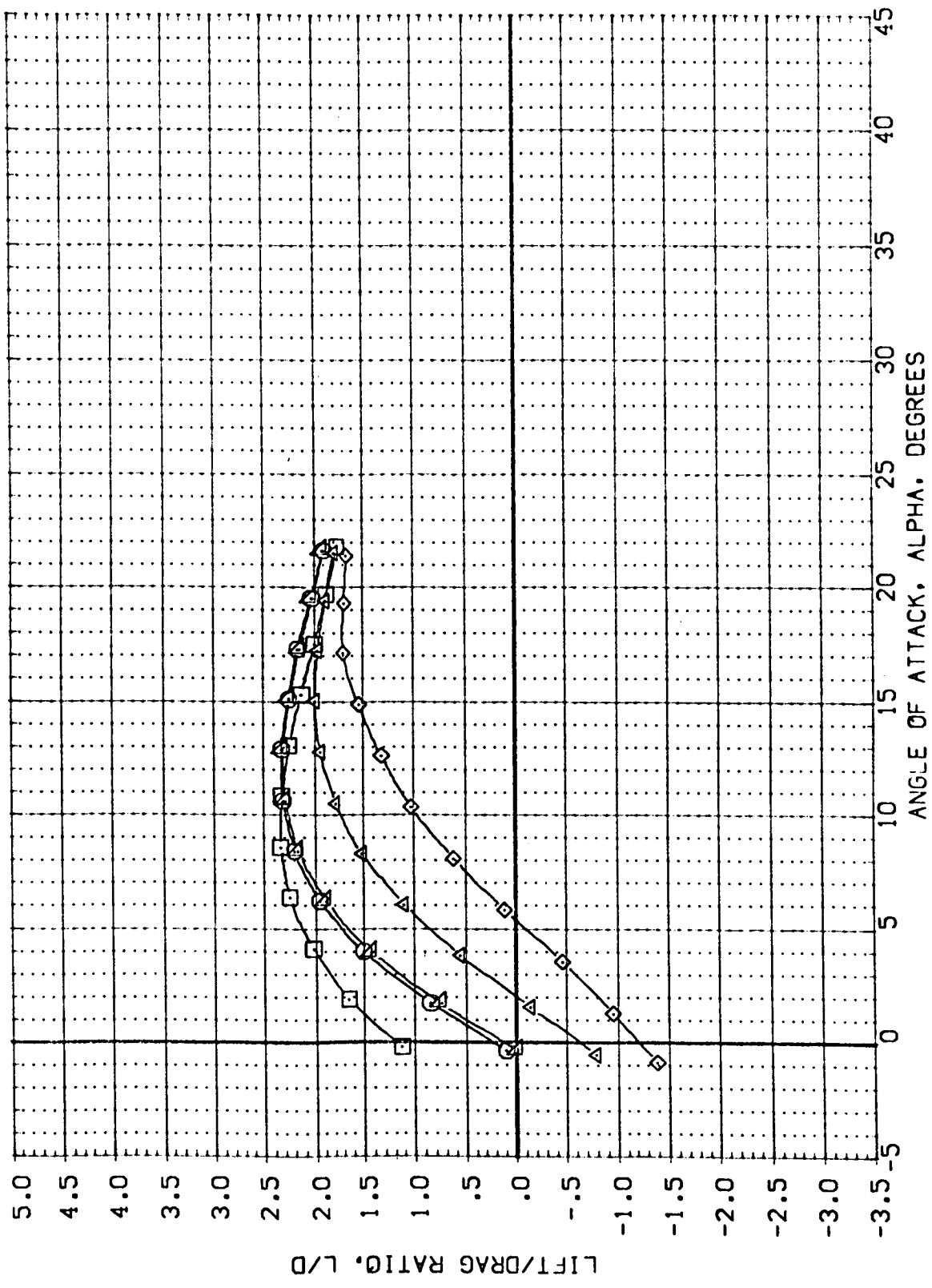


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

(C)MACH = 1.19

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	WFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2680.0000
(F87S38)	WFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.0000
(F87S42)	WFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	SREF 936.7000
(F87S43)	WFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.0000
(F87S44)	WFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	WREF .0000
						ZREF .0000
						SCALE .0040

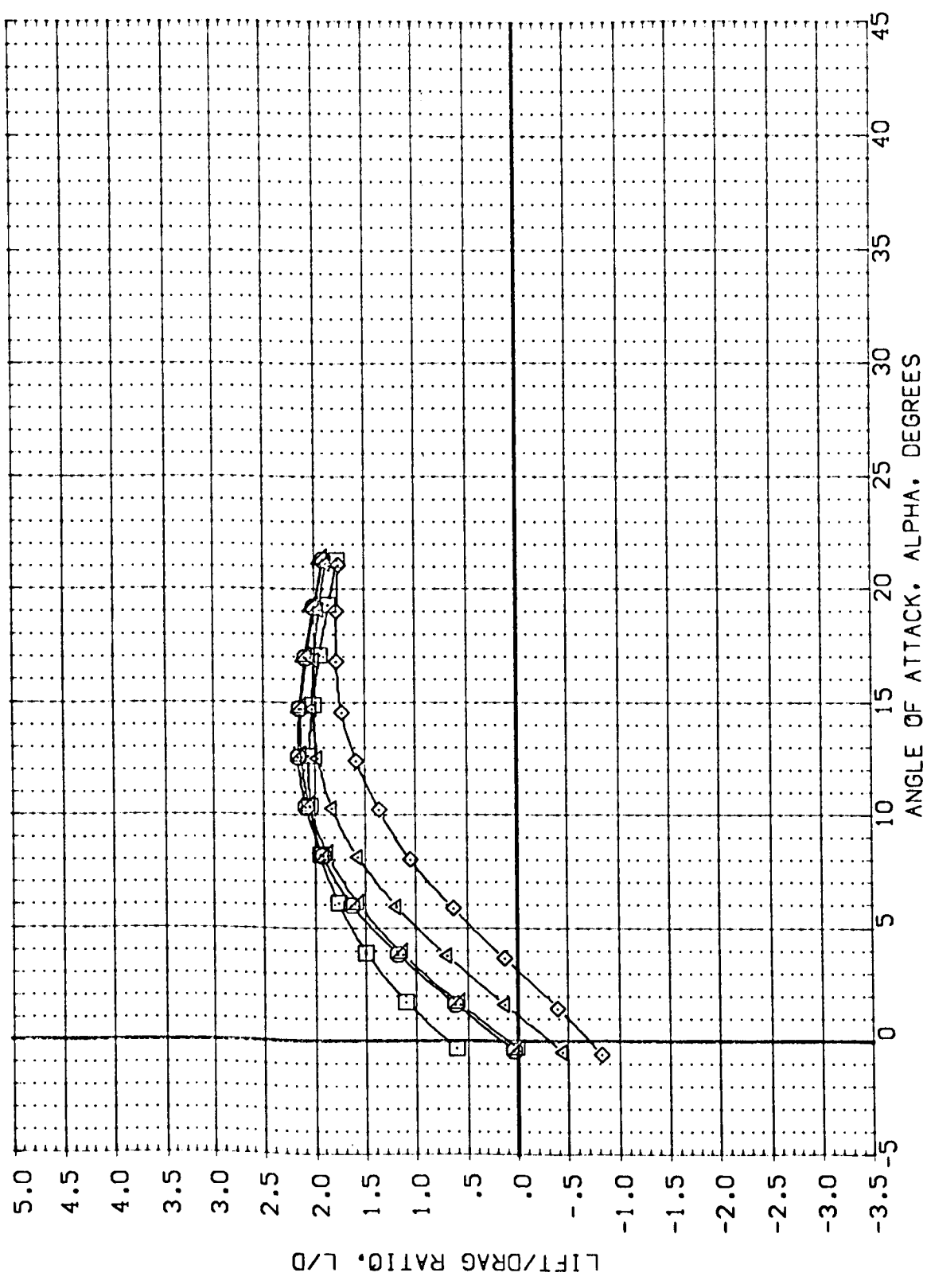
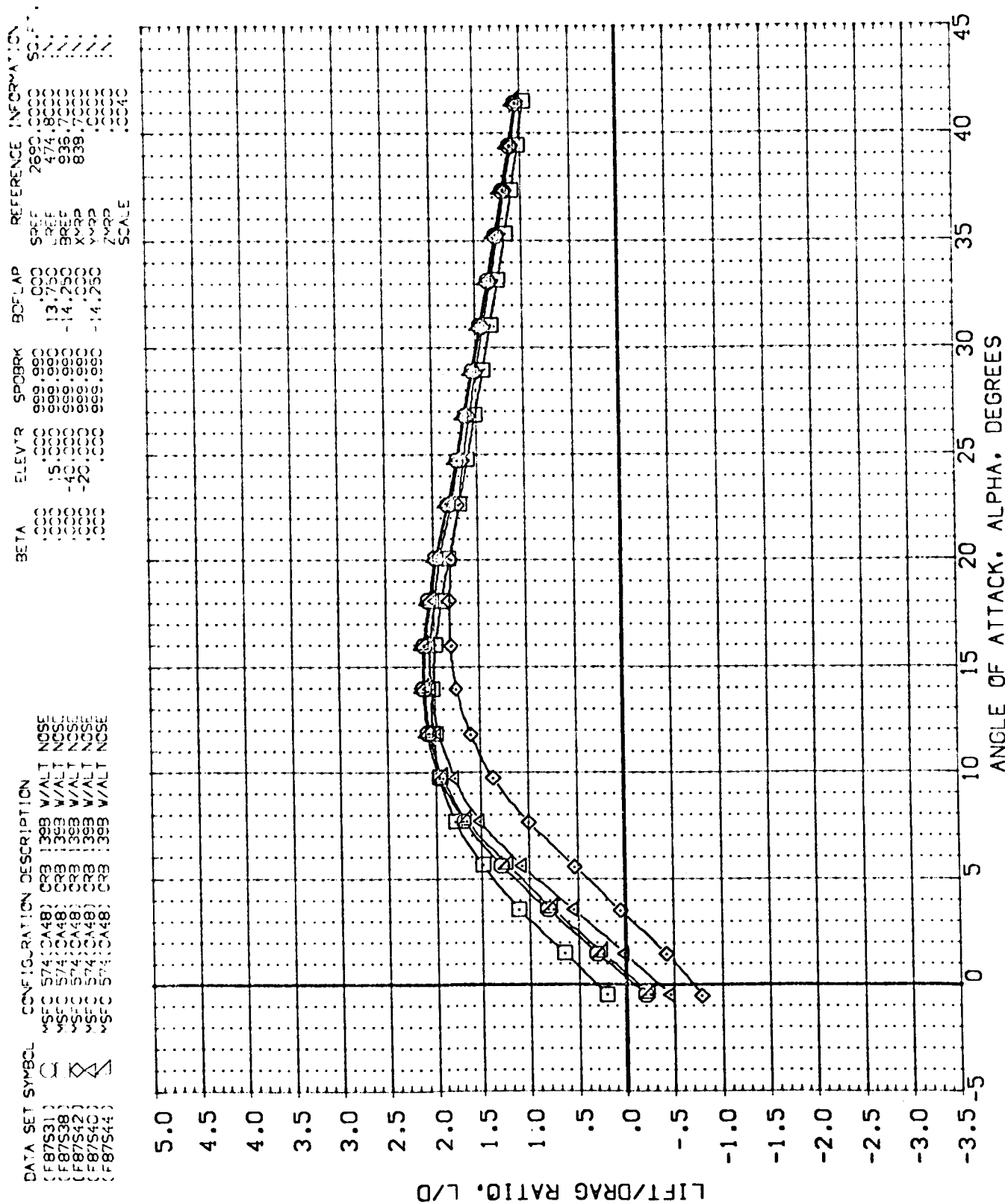


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

CONFAC = 1.95



DATA SET SYMBO.	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	SEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	SEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87542)	SEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	BREF 936.0000
(F87543)	SEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	XVRP 838.0000
(F87544)	SEC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	VVRP .0000
						ZVRP .0000
						SCALE .0000

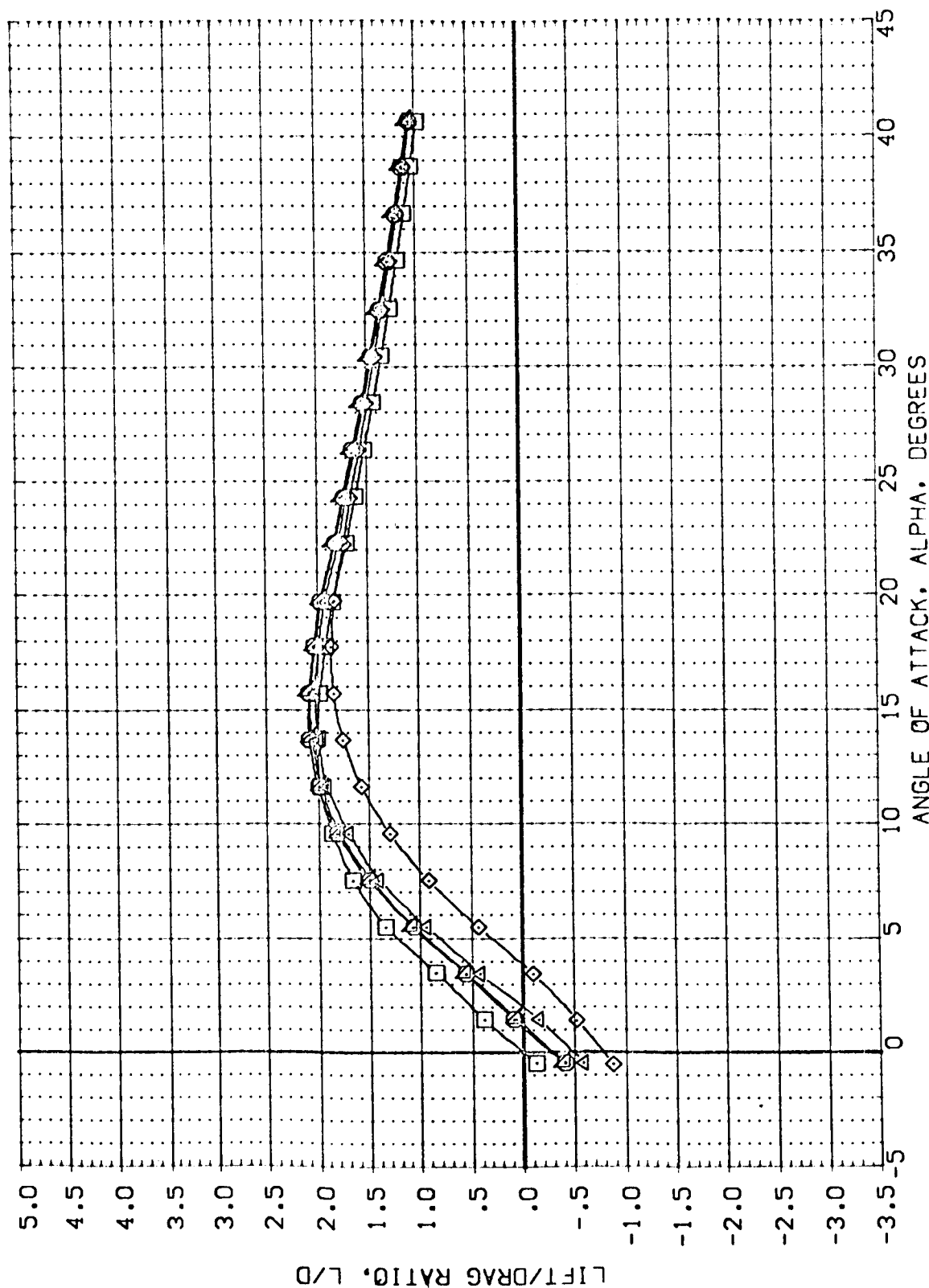


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NOSE

CRBMACH = 4.98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SCALE
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000	SC.F.T.
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000	SC.F.T.
(F87542)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000	SC.F.T.
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	XVRP 838.7000	SC.F.T.
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	VVRP .0000	SC.F.T.
						ZVRP .0000	SC.F.T.
						SCALE .0040	

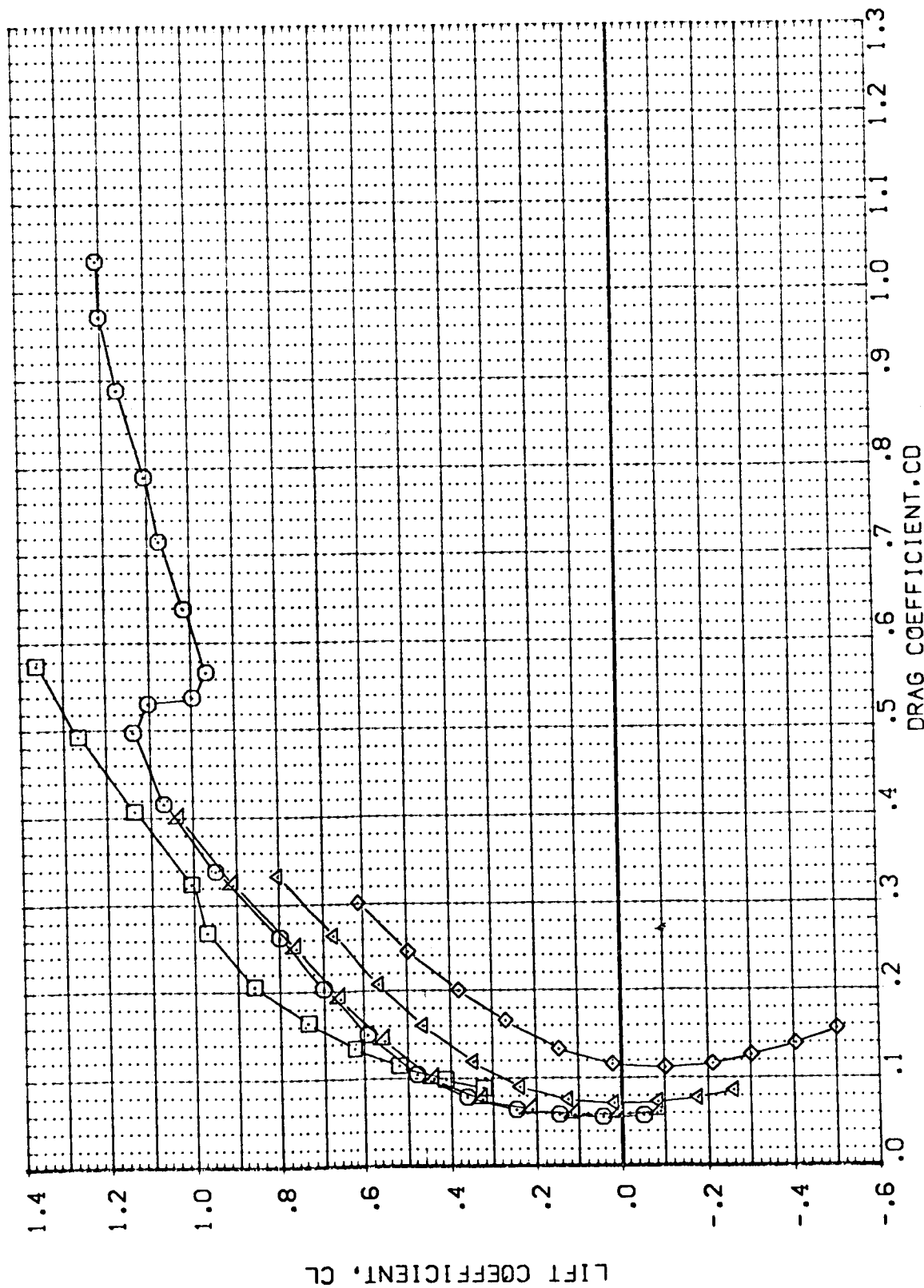


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOCLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	.000	REF 474.8000
(F87S32)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.000	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	XVBP 838.0000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.750	VVBP .0000
						ZVBP .0040
						SCALE

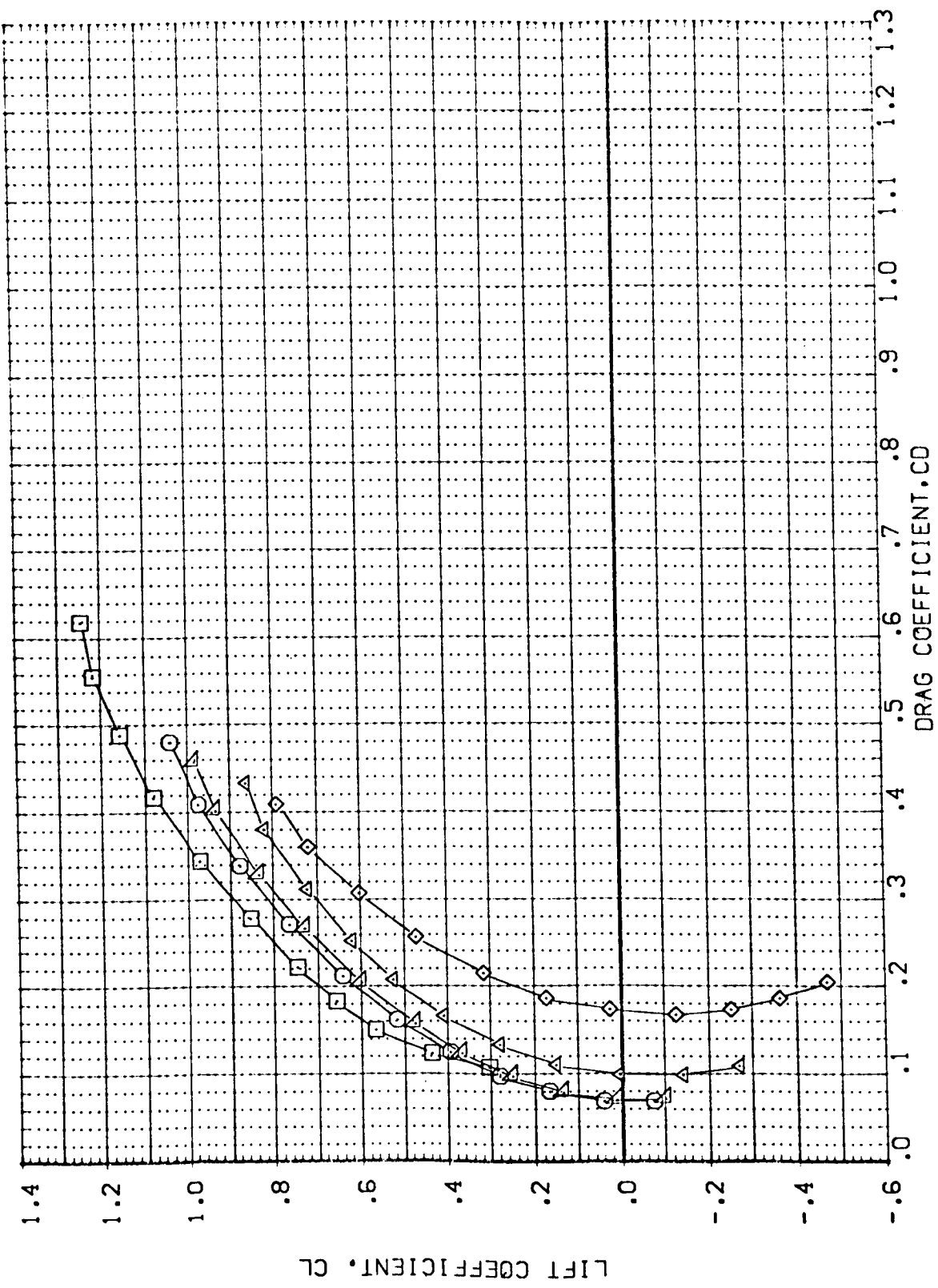


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B) VACH = .9C

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPDRK	BDELAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) CRB 1398 W/ALT NCSE	.000	.000	999.990	.000	SPREF 2690.0000
(F87S38)	MSFC 574(OA48) CRB 1398 W/ALT NCSE	.000	15.000	999.990	.000	SPREF 474.8000
(F87S42)	MSFC 574(OA48) CRB 1398 W/ALT NCSE	.000	-10.000	999.990	-13.750	SPREF 935.7000
(F87S43)	MSFC 574(OA48) CRB 1398 W/ALT NCSE	.000	-20.000	999.990	-14.250	SPREF 938.0000
(F87S44)	MSFC 574(OA48) CRB 1398 W/ALT NCSE	.000	.000	999.990	-14.250	SPREF 938.0000

SCALE .0040

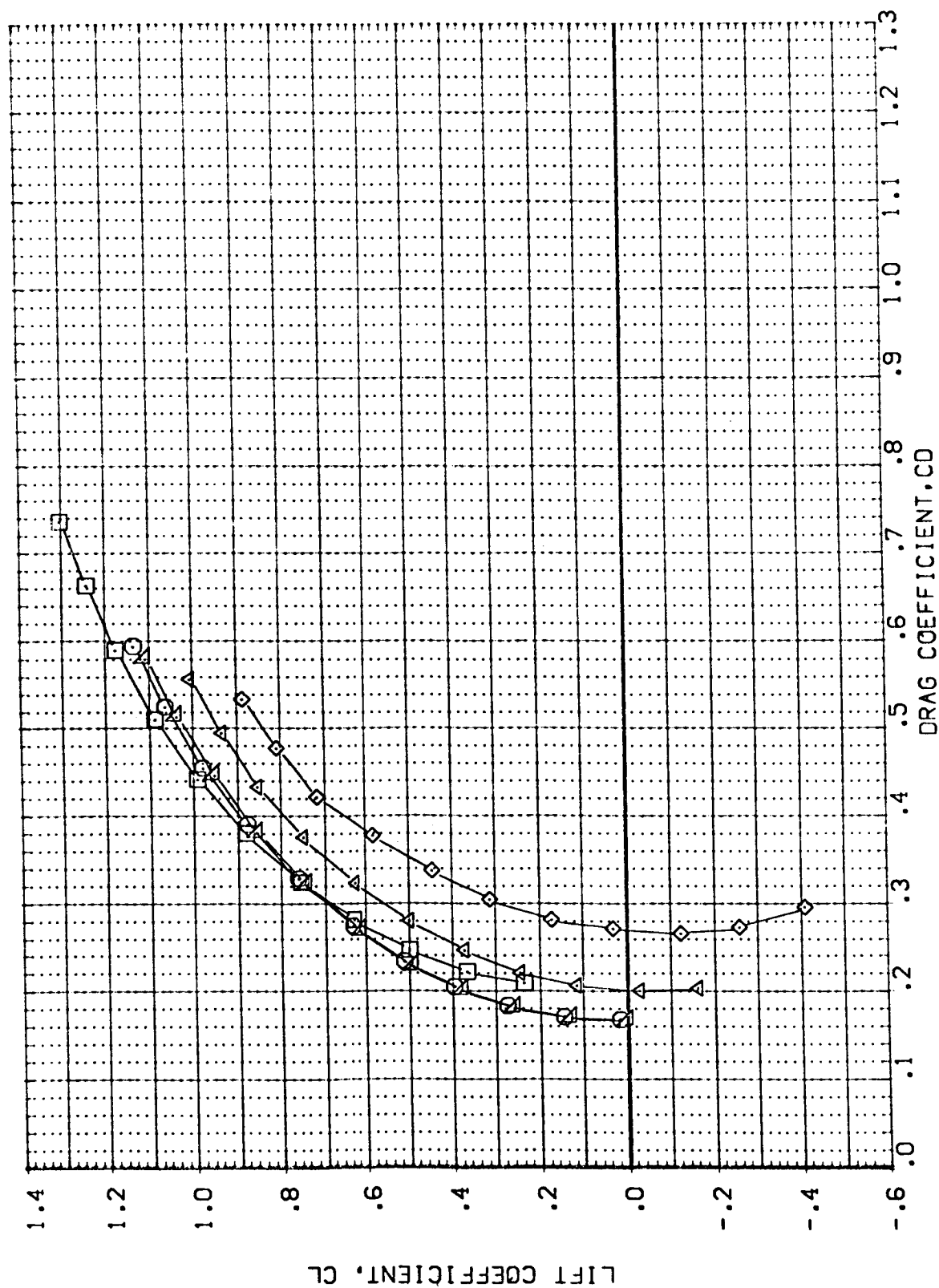


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOISE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOGRK	BDFLAP	REFERENCE INFORMATION
(F87531)	VSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.990	.000	SPREF 2690.0000 SC.F.
(F87538)	VSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.990	.000	LREF 474.8000
(F87540)	VSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.990	.000	BREF 935.7000
(F87542)	VSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.990	.000	XVREF 838.7000
(F87544)	VSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.990	.000	YVREF 1000.0000
						ZVREF 1000.0000
						SCALE 1.0000

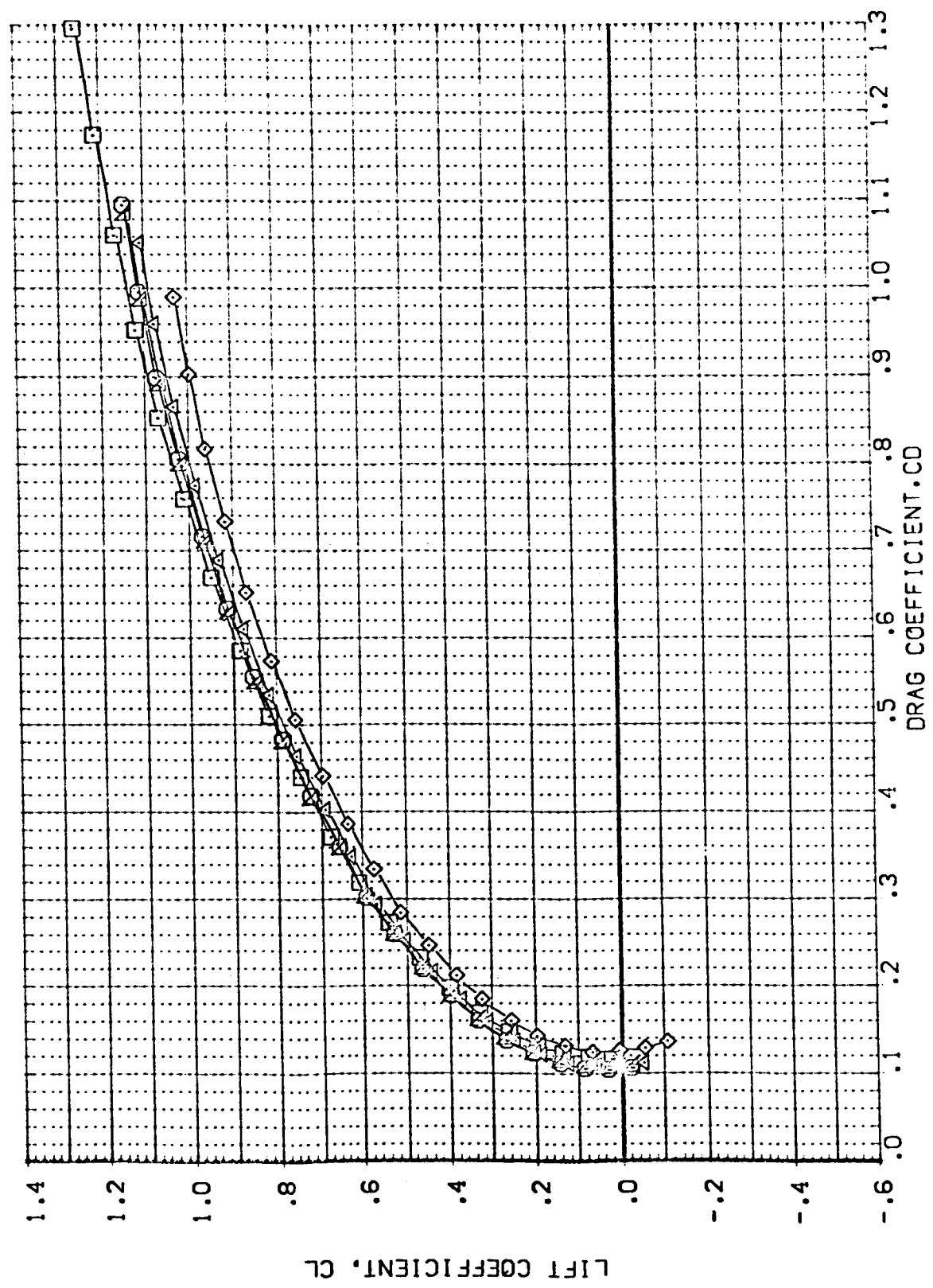


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOF LAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 398 W/ALT N3SE	.000	.000	999.990	.000	SPCF 2590.0000
(F87538)	MSFC 574(CA48) CRB 398 W/ALT N3SE	.000	15.000	999.990	13.750	REF 474.8000
(F87542)	MSFC 574(CA48) CRB 398 W/ALT N3SE	.000	-40.000	999.990	-14.250	BRF 936.7000
(F87540)	MSFC 574(CA48) CRB 398 W/ALT N3SE	.000	-20.000	999.990	.000	XV39 838.7000
(F87544)	MSFC 574(CA48) CRB 398 W/ALT N3SE	.000	.000	999.990	-14.000	VW39 .0000
					ZV39 .0000	SCALE .0010

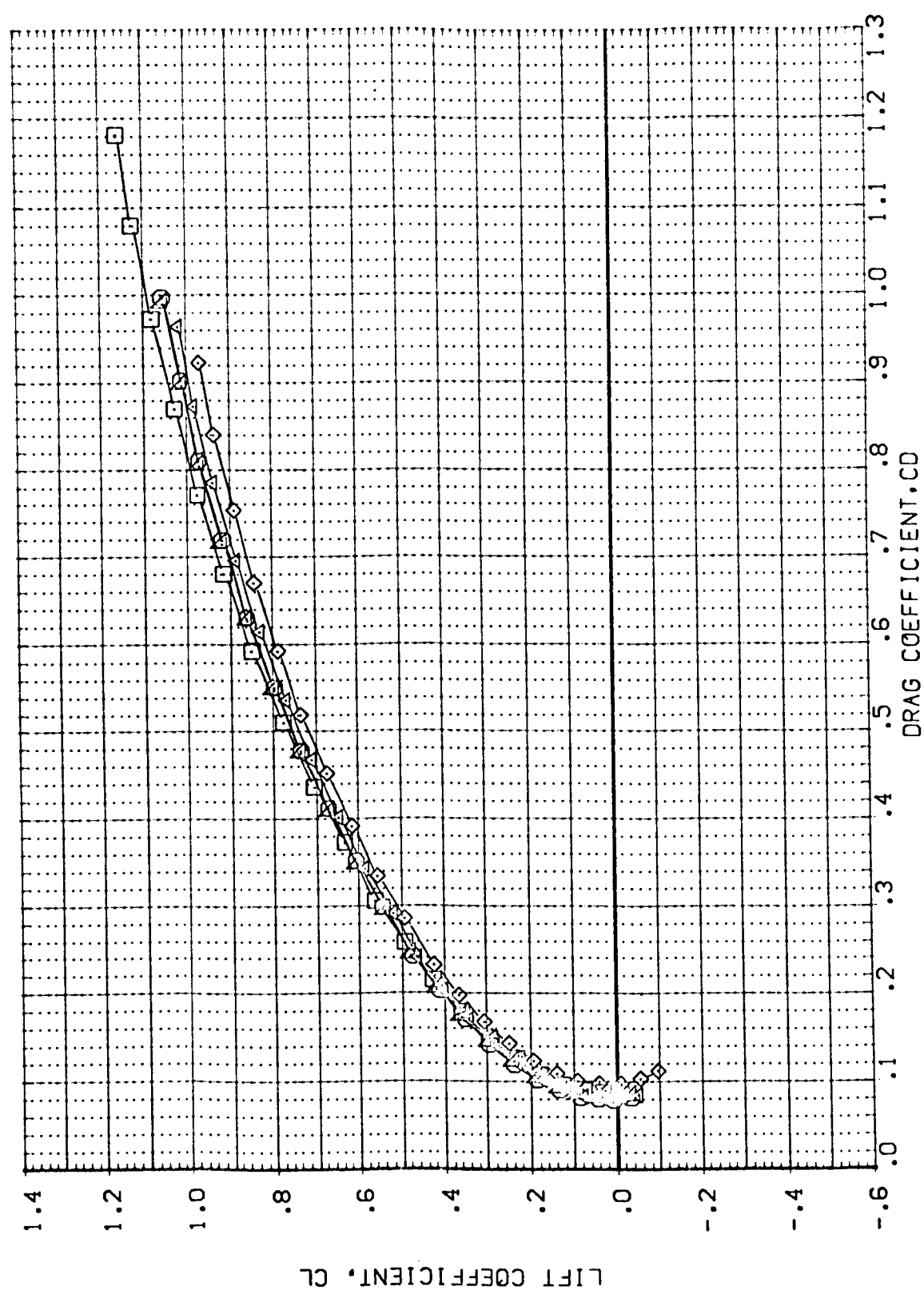


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (F)MACH = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
(G87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	STEF 2690.0000
(G87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000
(G87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-45.000	999.990	-14.250	BREF 936.7000
(G87S43)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	XREF 864.5000
(G87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	YREF 864.5000
						ZREF 864.5000
						SCALE .0040

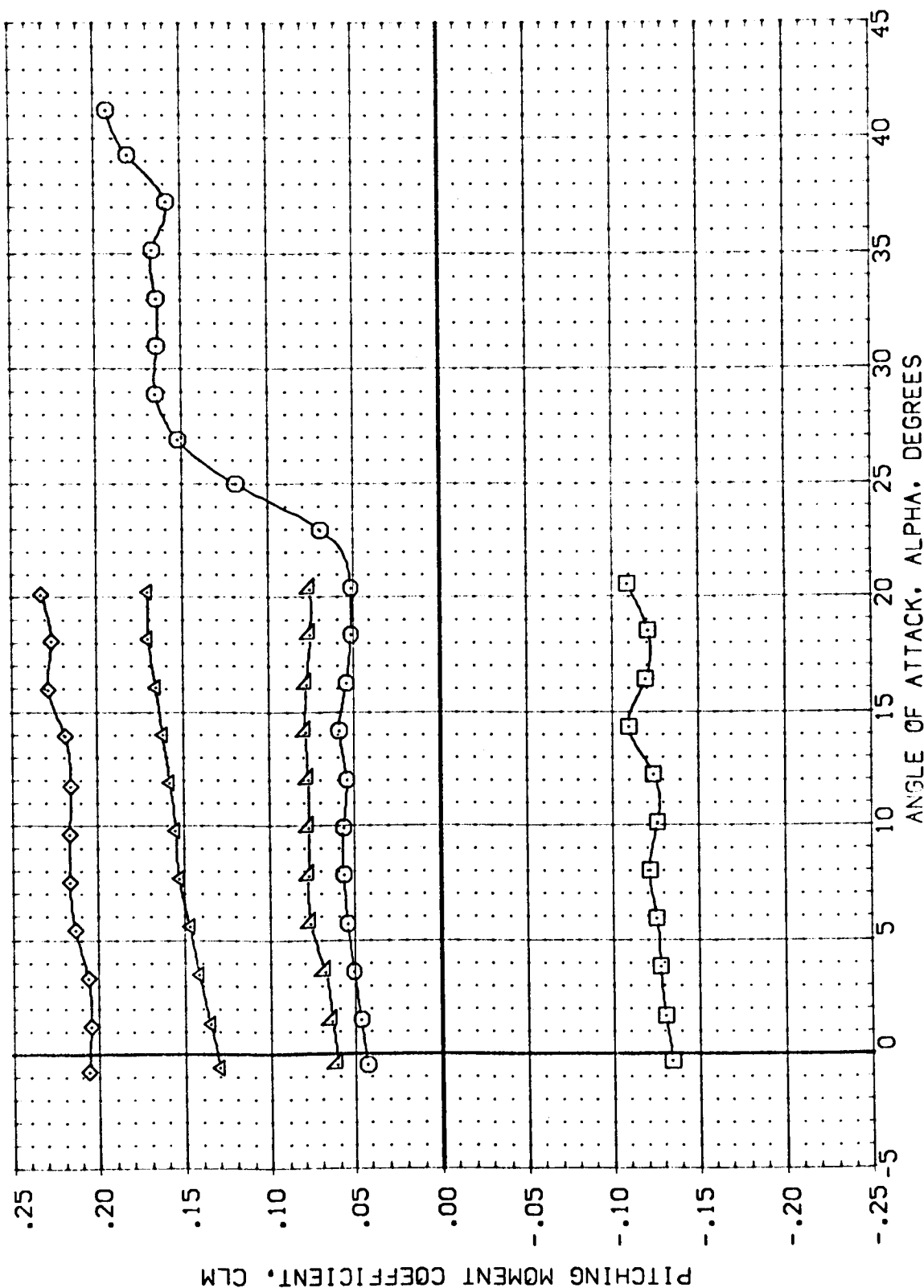


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139B WITH ALT. NOSE(AFT CG)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(S87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	2690.0000 SQ.FT.
(S87538)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	474.8000
(S87542)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	936.7000
(S87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	864.5000
(S87544)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	.0000
					SCALE	.0040

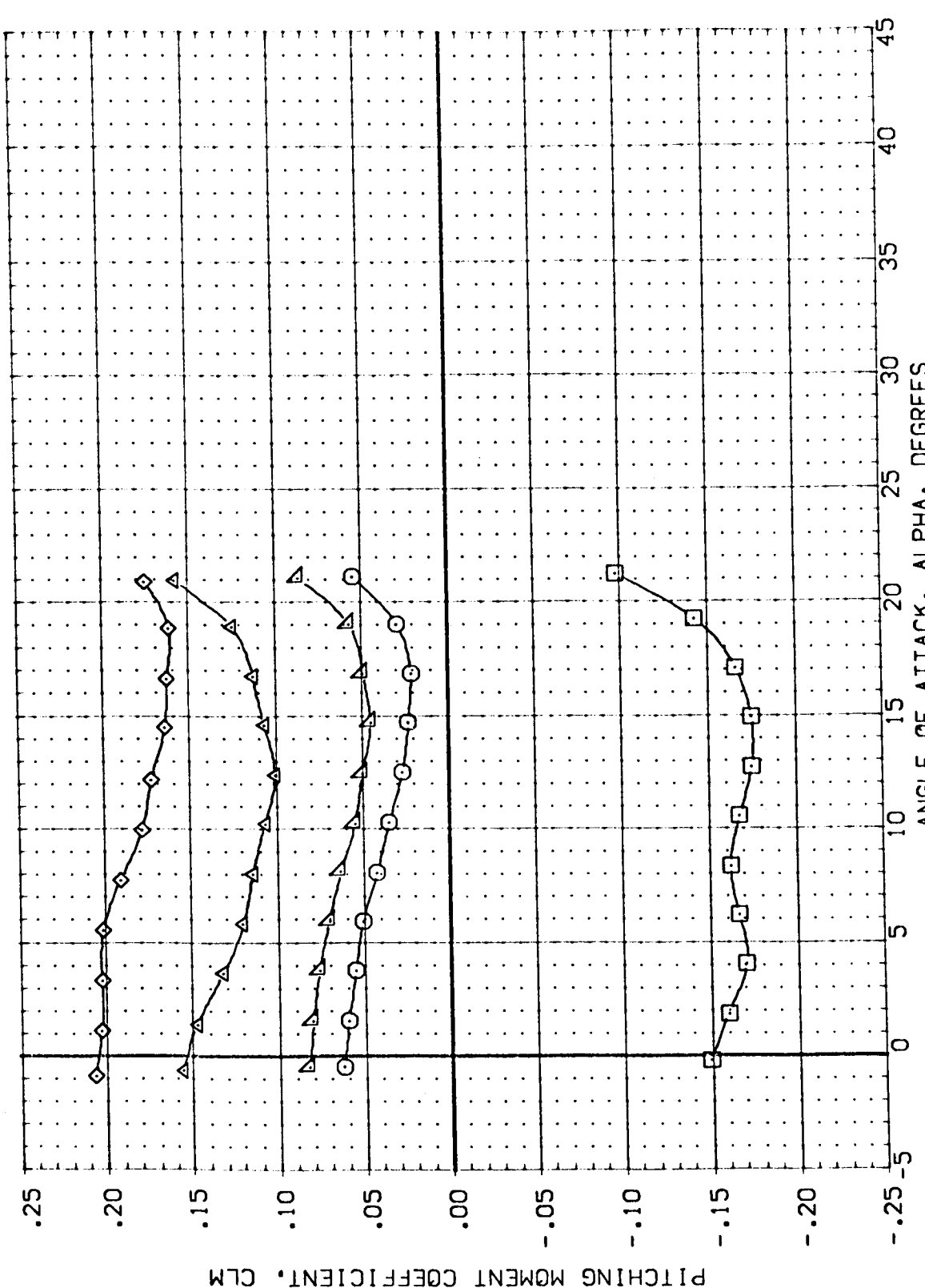
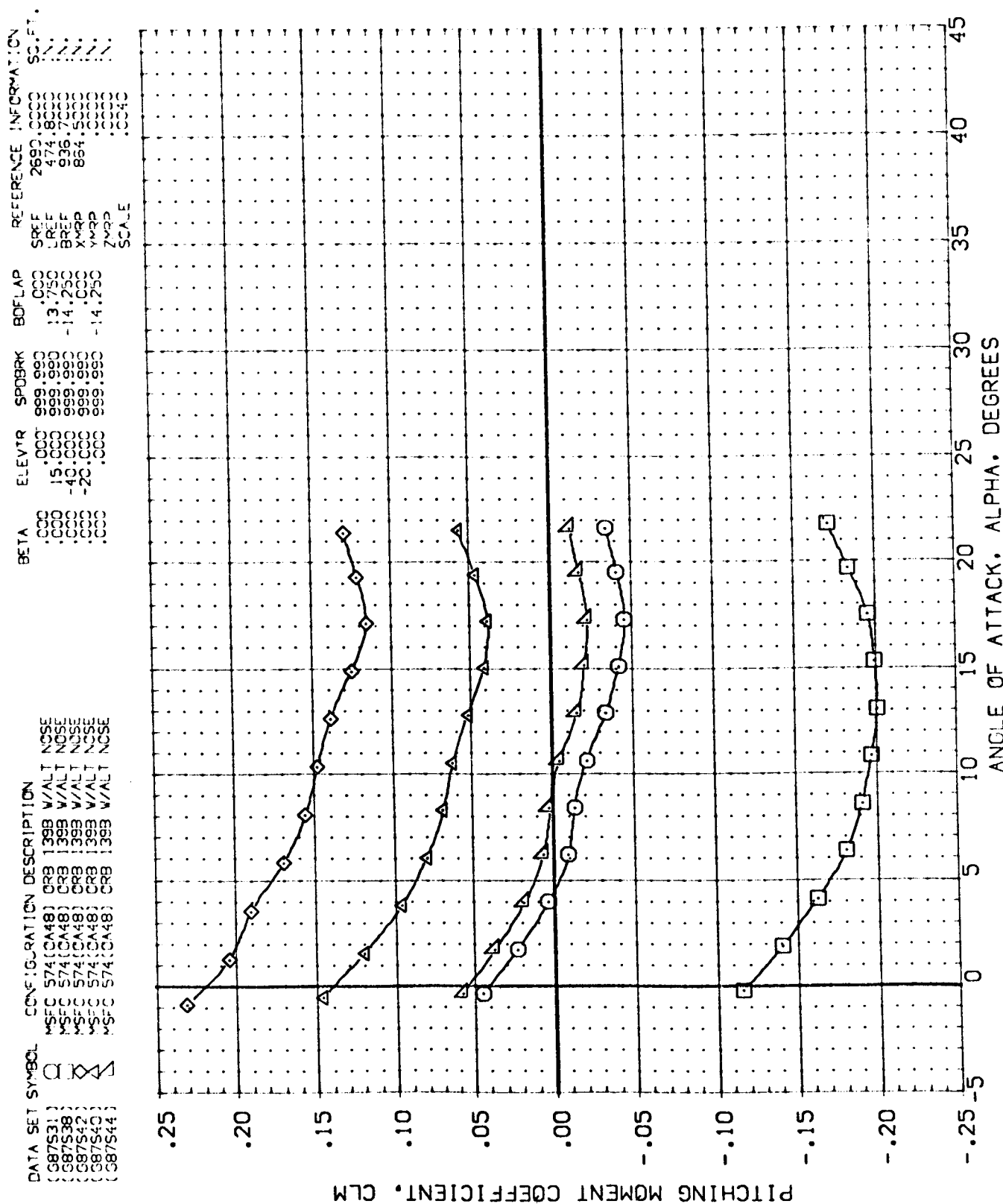


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1398 WITH ALT. NOSE(AFT CG)

(B)YACH = .90

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(C87531)	WSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	.000	999.990	.000	2690.0000
(C87538)	WSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	15.000	999.990	.000	474.8000
(C87542)	WSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	938.7000
(C87543)	WSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	864.5000
(C87544)	WSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	.0000
					SCALE	.0040

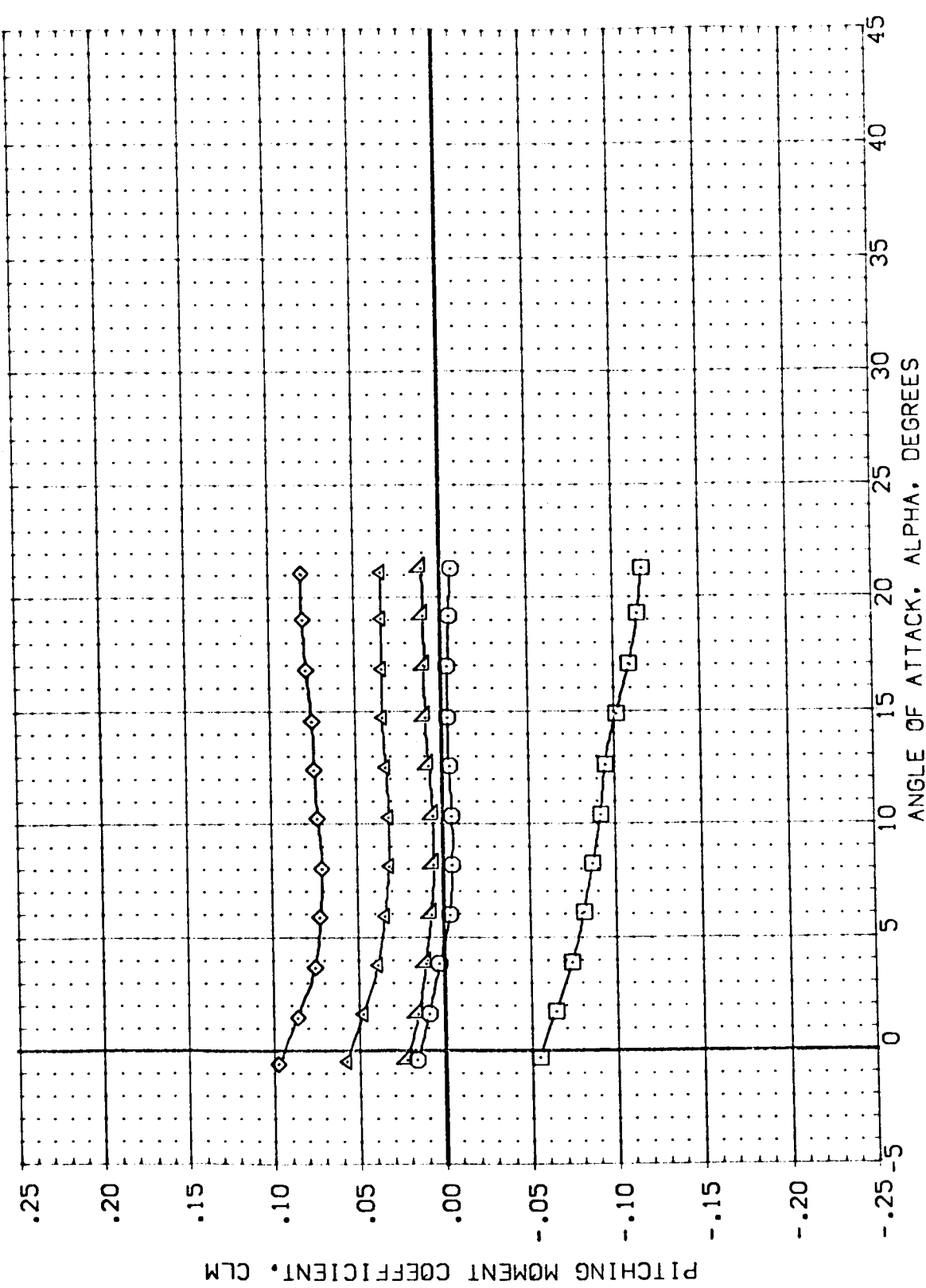


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1398 WITH ALT. NOSE(AFT CG)

(C) VACH = 1.95

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(087531)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.999	.000	SOEF 2690 0000 50.000
(087538)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.999	.000	SOEF 474 8000 50.000
(087542)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	15.000	999.999	13.750	SOEF 935 7000 50.000
(087540)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	-40.000	999.999	-14.250	SOEF 864 5000 50.000
(087544)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	-20.000	999.999	-14.250	SOEF 0000 0000 50.000
						SCALE 0040

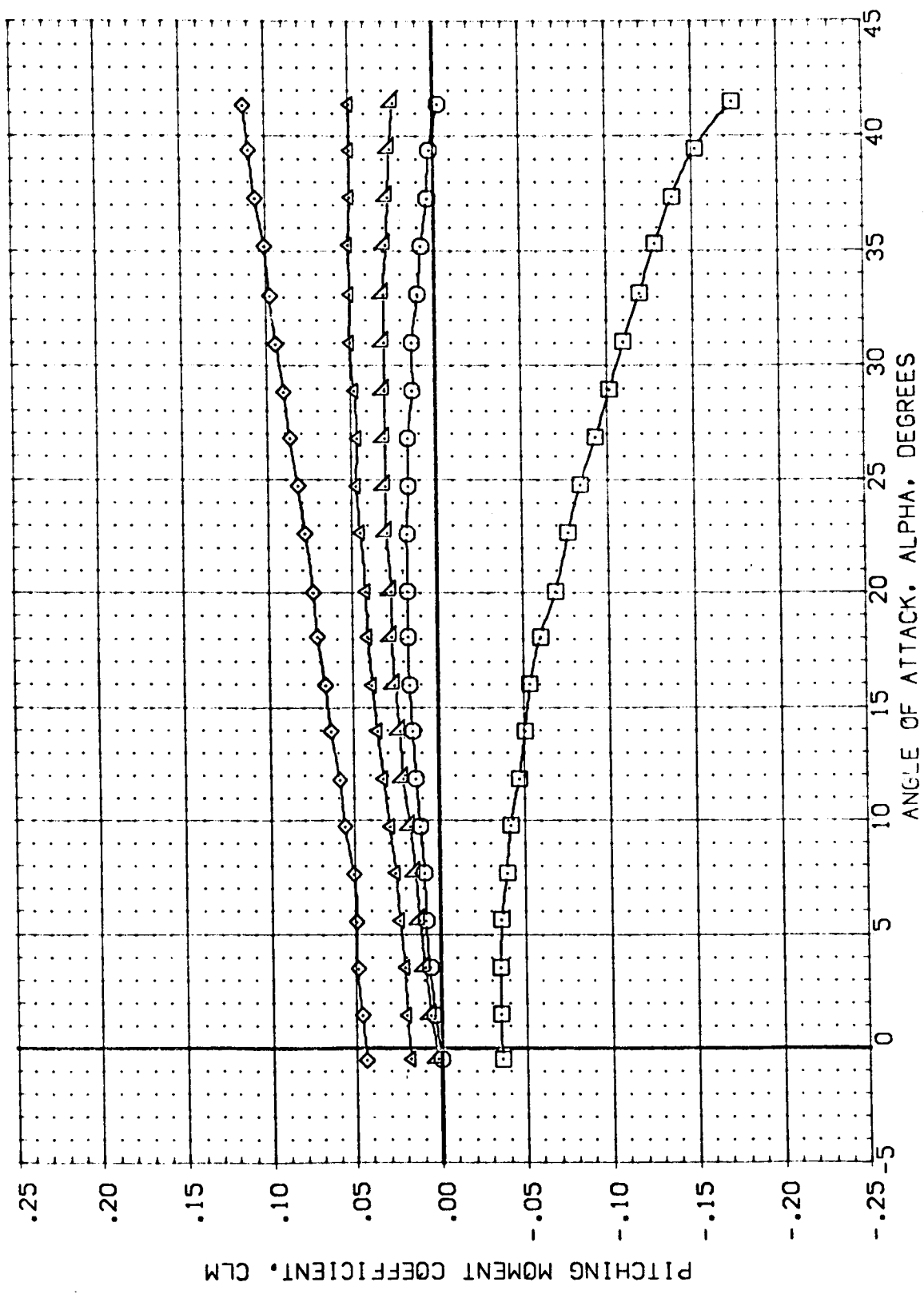


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139B WITH ALT. NOSE(AFT CG)

CEOMACH = 2.99

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(387531)	WSFC 574(CA48) CRB 1393 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(387538)	WSFC 574(CA48) CRB 1393 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(387542)	WSFC 574(CA48) CRB 1393 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(387540)	WSFC 574(CA48) CRB 1393 V/ALT NOSE	.000	-20.000	999.990	.000	XREF 854.5000
(387544)	WSFC 574(CA48) CRB 1393 V/ALT NOSE	.000	.000	999.990	-14.750	YREF .0000
					ZREF .0000	SCALE .0040

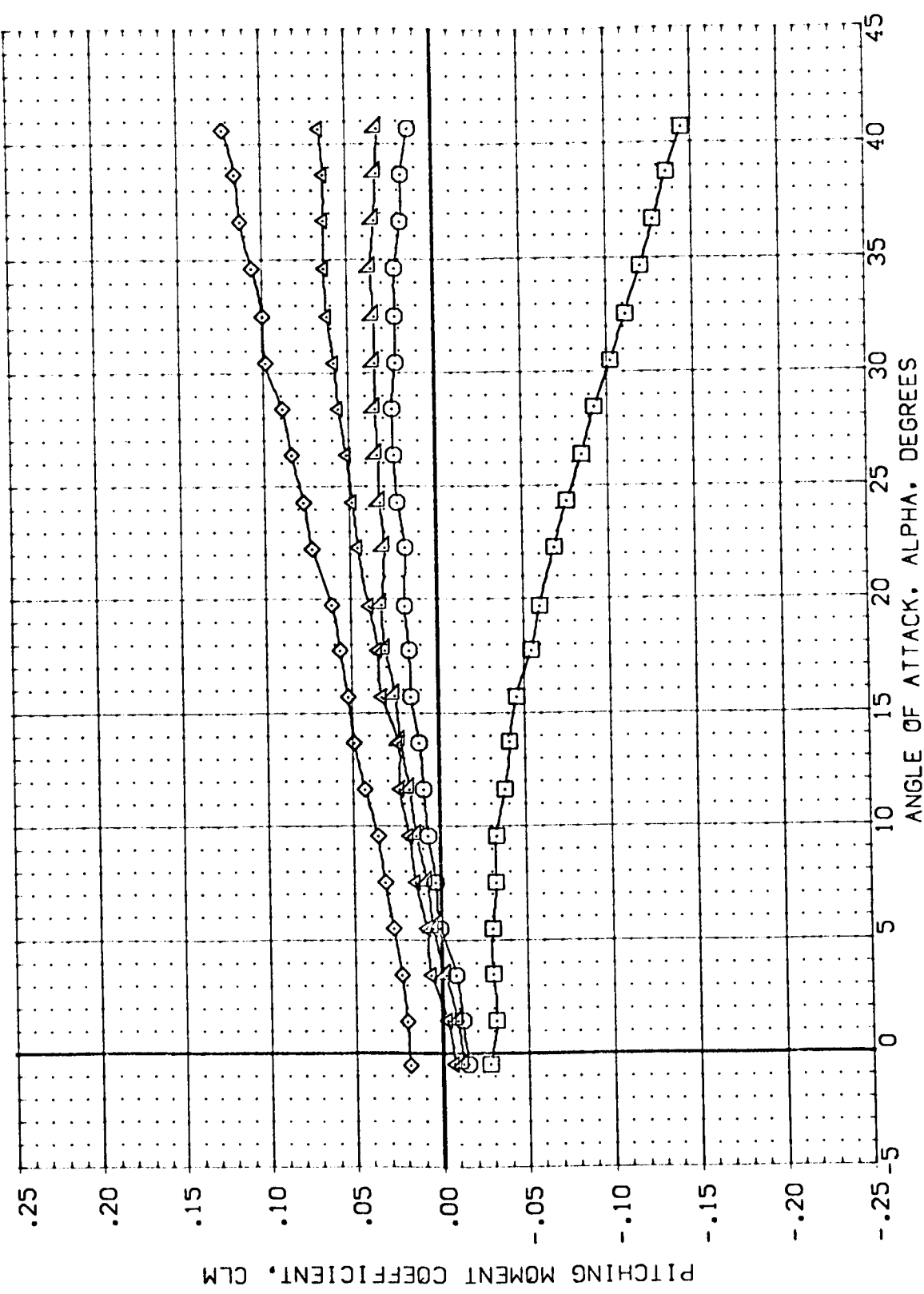
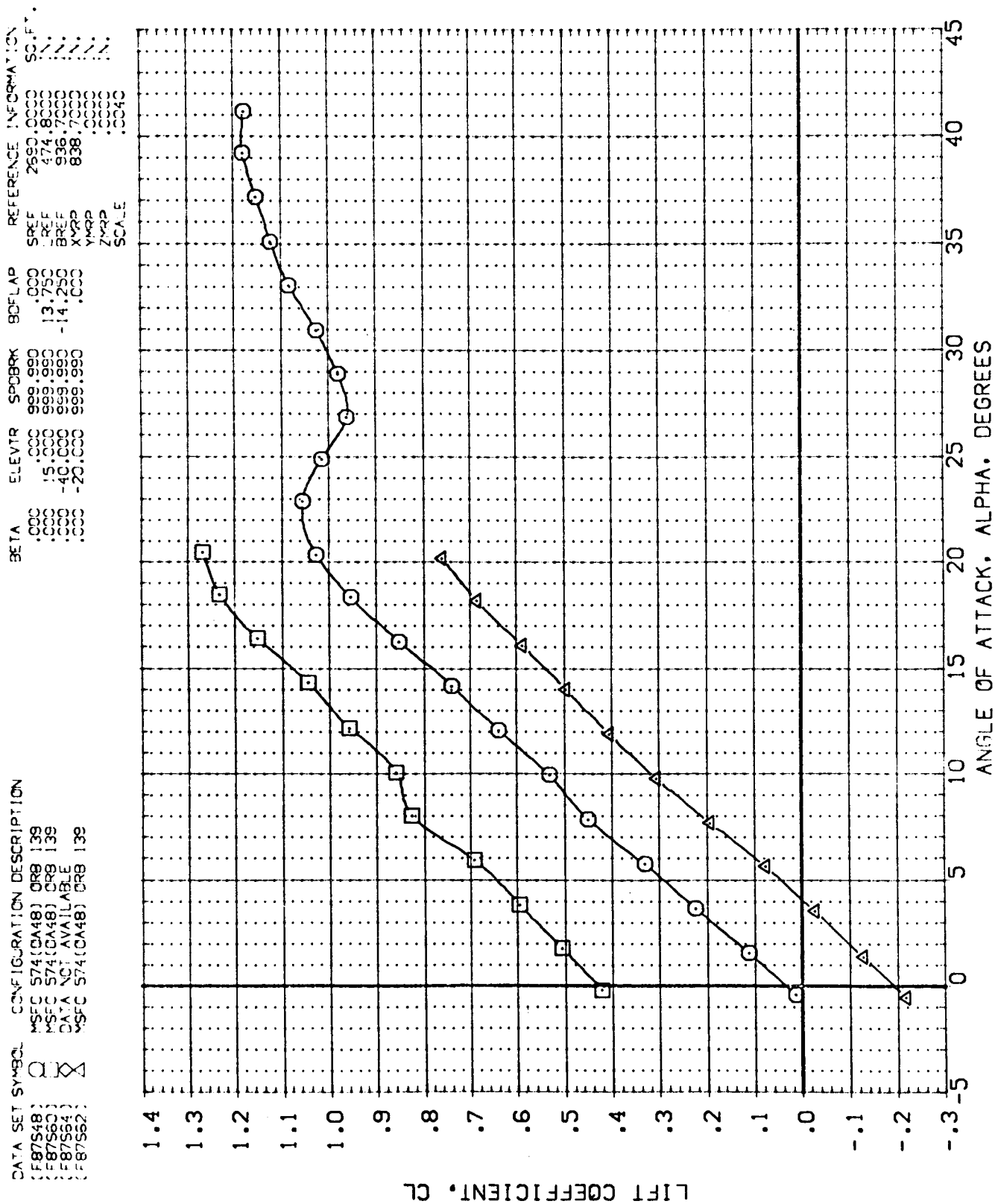


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1393 WITH ALT. NOSE(AFT CG)

REYNOLDS = 4.96

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$$\{A\} \sim \text{ACH} = .60$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(CA48) CRB 139	.000	.000	.999.990	.000	SREF 2690.0000 SC.F.T.
(F87S50)	MSFC 574(CA48) CRB 139	.000	15.000	.999.990	13.750	LREF 474.8000
(F87S52)	DATA NOT AVAILABLE	.000	-40.000	.999.990	-14.250	BREF 836.7000
(F87S62)	MSFC 574(CA48) CRB 139	.000	-20.000	.999.990	.000	XVAP 838.7000
						VVAP .0000
						ZVAP .0000
						SCALE .0040

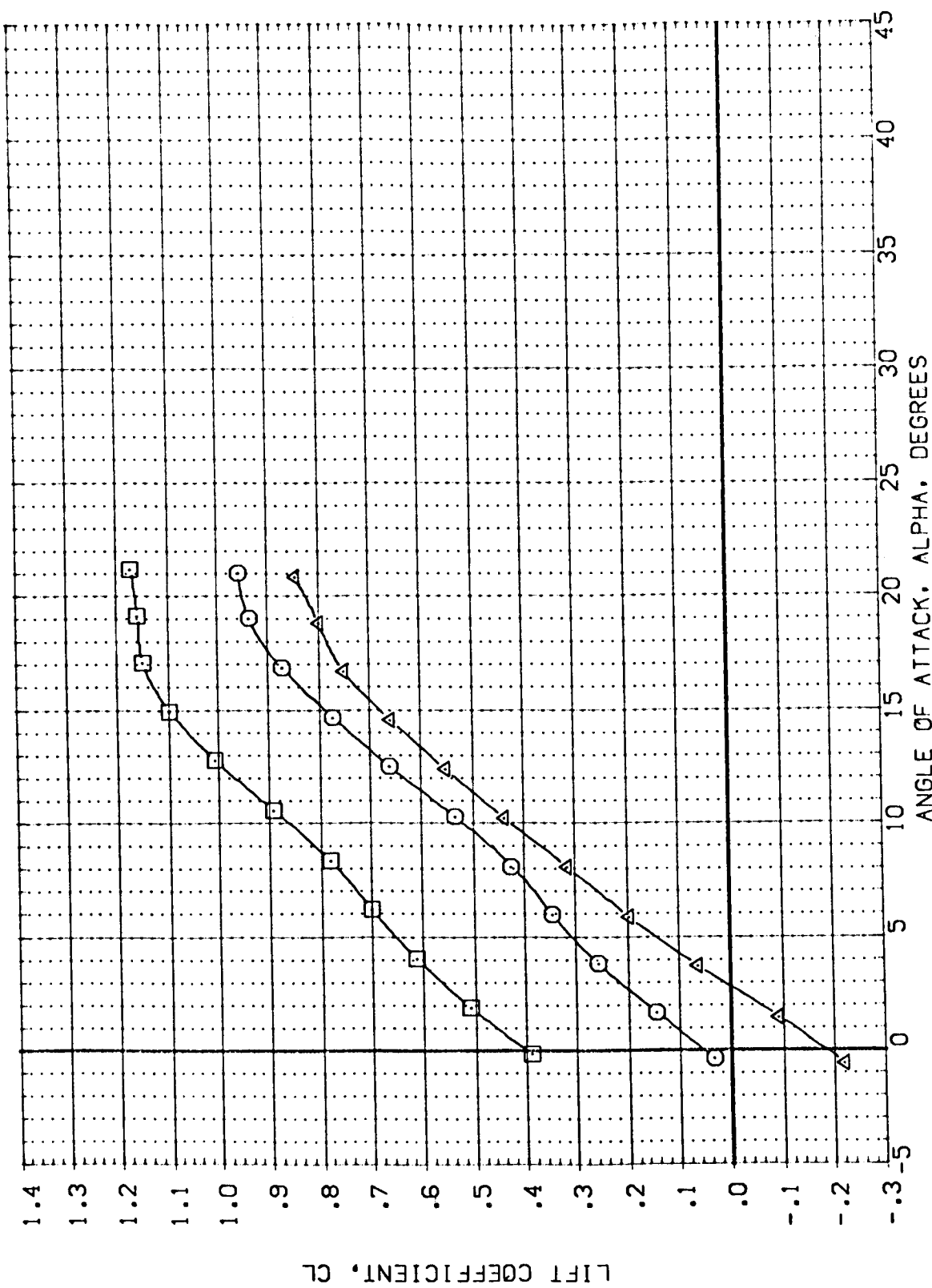


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139

(B) VACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(CA48) CR3 139	.000	.000	999.990	.000	SREF 2890.0000 SC.F.
(F87S50)	MSFC 574(CA48) CR3 139	.000	.000	999.990	13.750	UREF 474.8000
(F87S61)	DATA NC AVAILABLE	.000	.000	999.990	-14.250	BREF 936.7000
(F87S62)	MSFC 574(CA48) CR3 139	.000	-20.000	999.990	.000	XREF 838.0000
					.000	YREF 000.0000
					.000	ZREF 000.0000
					.000	SCALE 0040

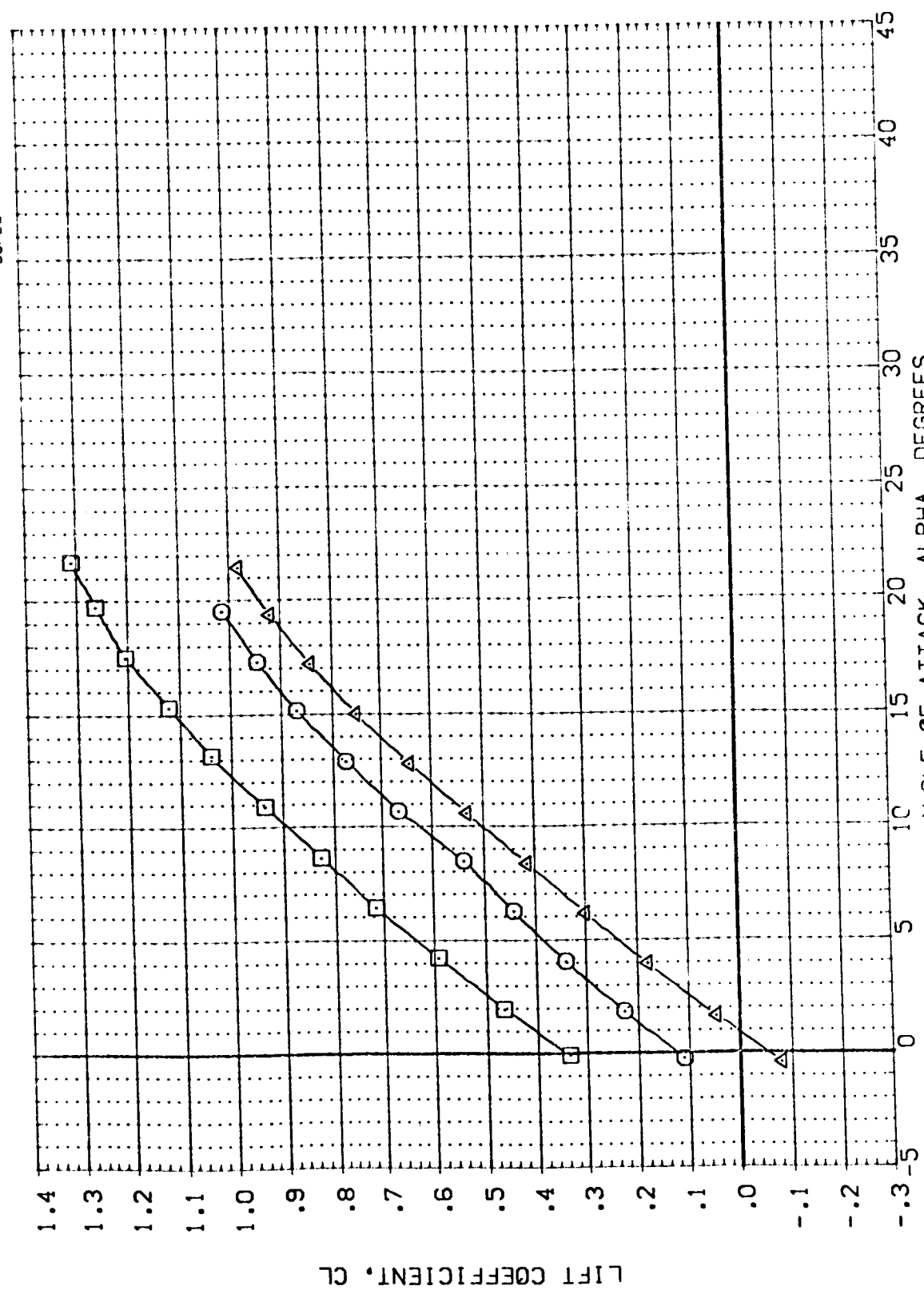


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139

(C) VACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S48) MSFC 574(CA48) CRB 139

(F87S60) MSFC 574(CA48) CRB 139

(F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 15.000 999.990 .000

.000 -40.000 999.990 -14.750

.000 -20.000 999.990 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 938.7000 IN.

XREF 838.7000 IN.

ZREF .0000 IN.

SCALE .0040

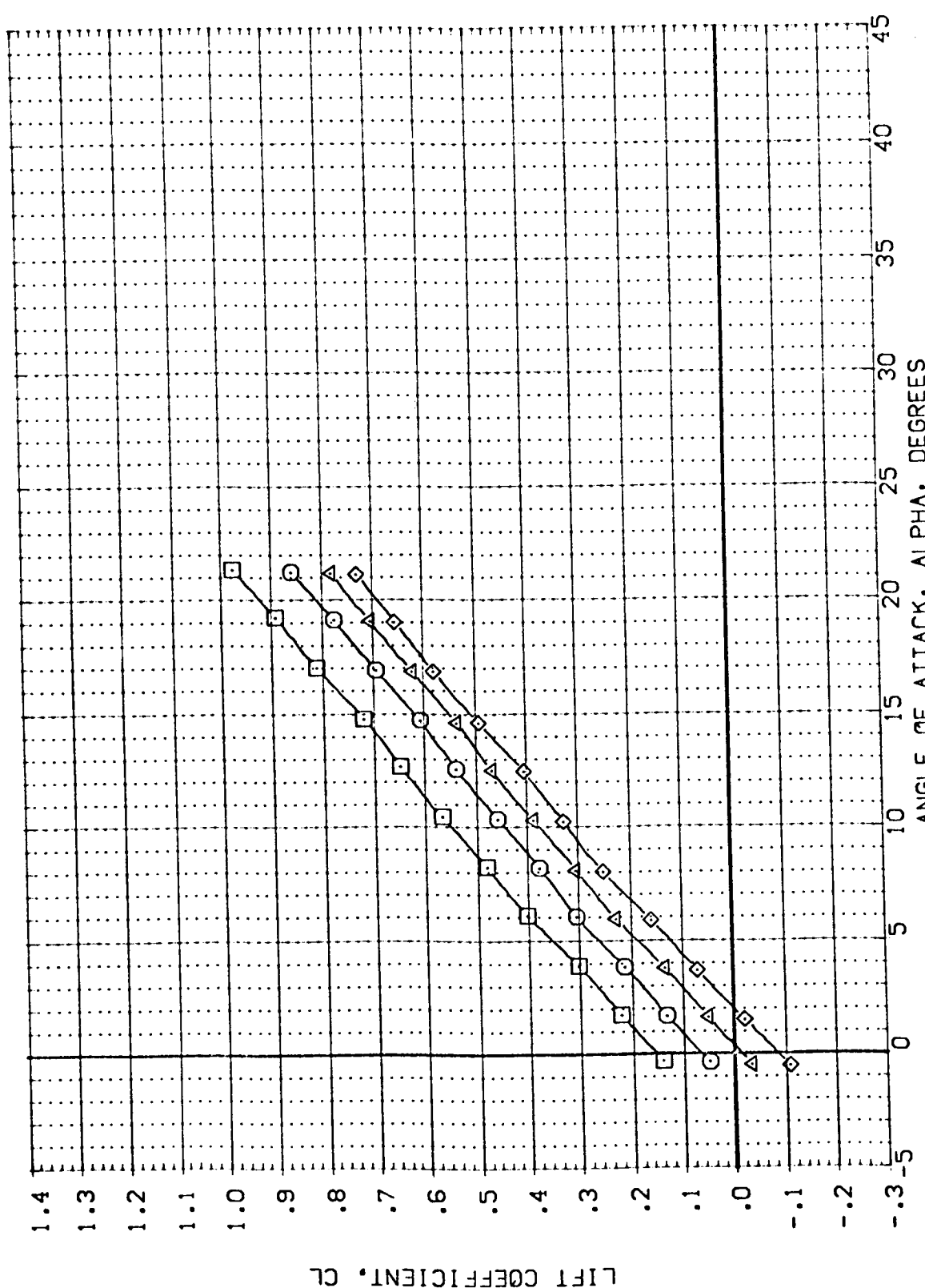
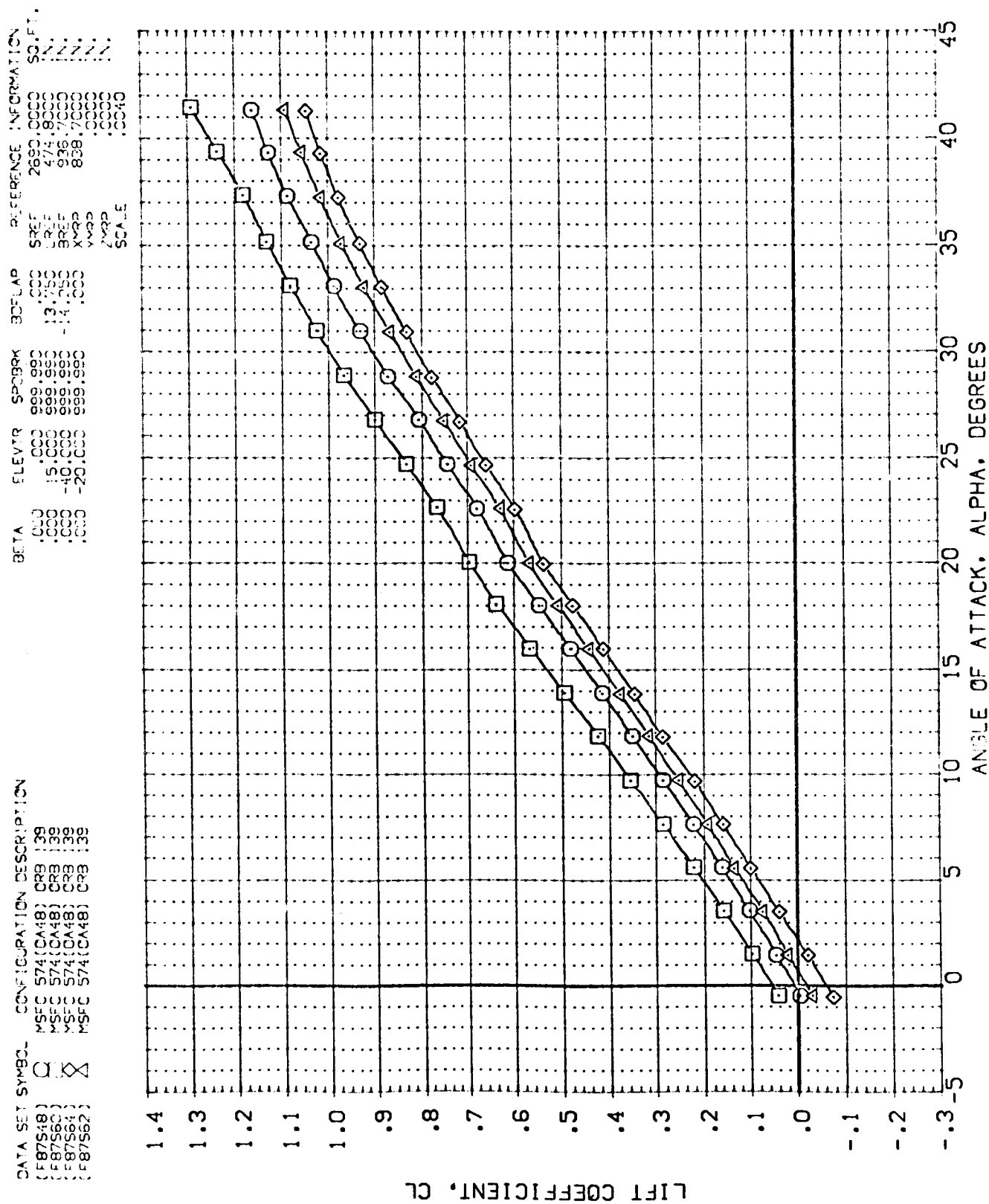


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMVACH = 1.95



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION	SCALE
(F87S48)	MSEC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000	SC.F.
(F87S50)	MSEC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000	SC.F.
(F87S54)	MSEC 574(CA48) CRB 139	.000	-10.000	999.990	-14.250	BREF 935.7000	SC.F.
(F87S52)	MSEC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000	SC.F.
						YMRP .0000	SC.F.
						ZMRP .0000	SC.F.
						SCALE .0040	

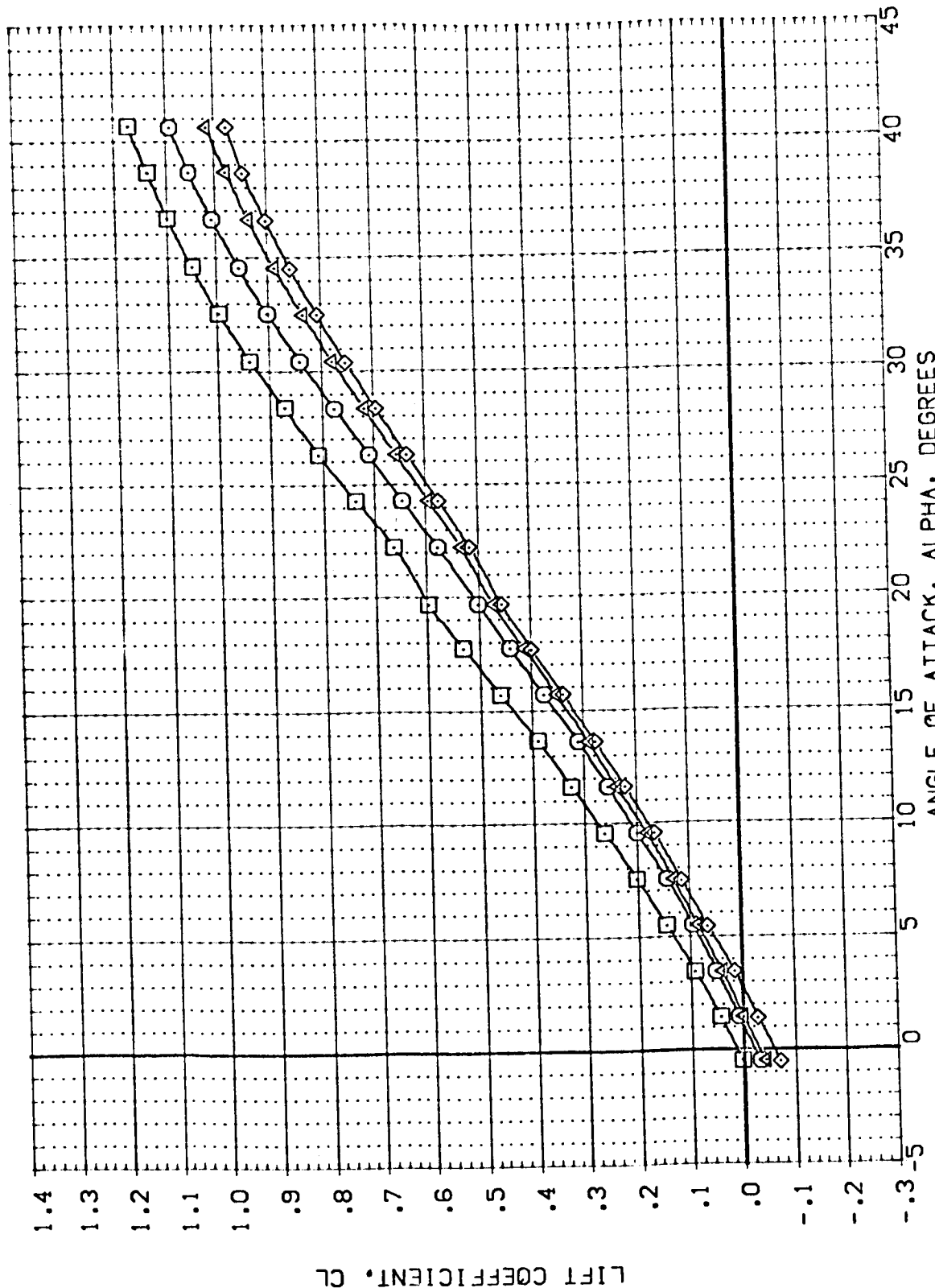


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)WACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPD3RK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S50)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S54)	DATA NOT AVAILABLE	.000	-40.000	999.990	.000	BREF 936.7000
(F87S52)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
					.000	YMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0010

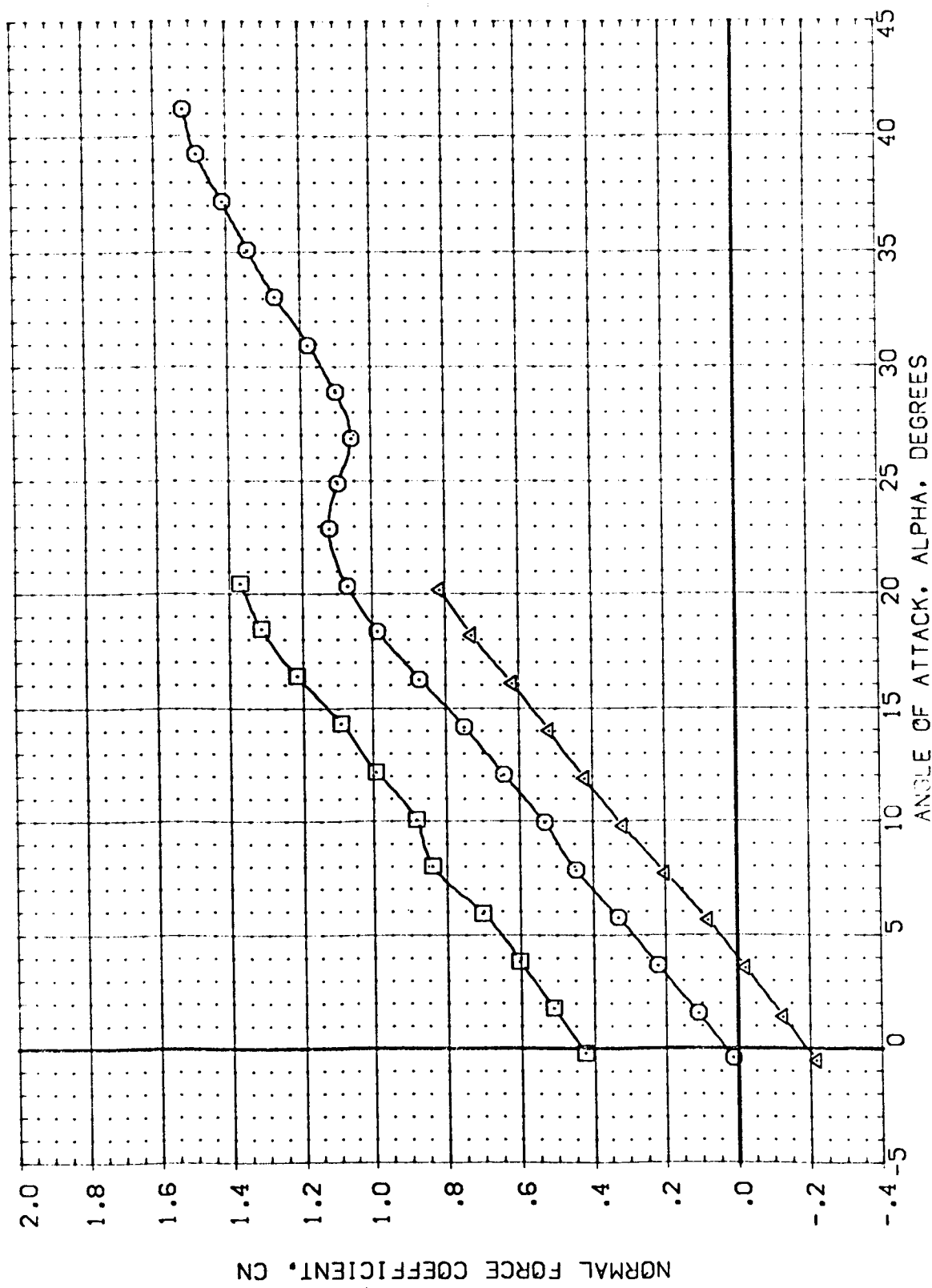


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CAYACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CR3 139
 (F87560) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SCALE
 .000 .000 999.990 .000 SREF 2690.0000
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XVRP 838.7000
 .000 .000 .000 YVRP .0000
 .000 .000 .000 ZVRP .0000
 .0040 SCALE

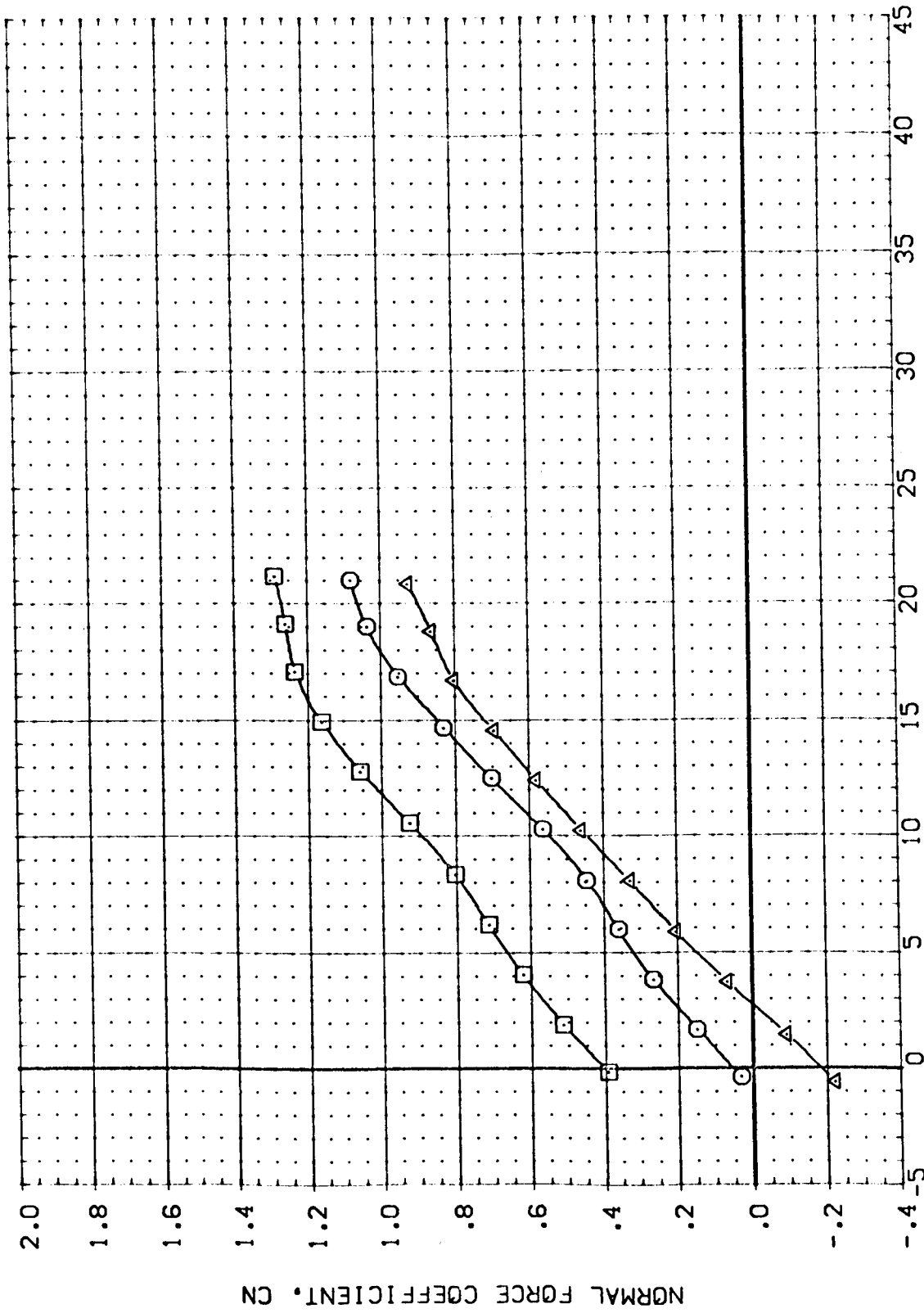
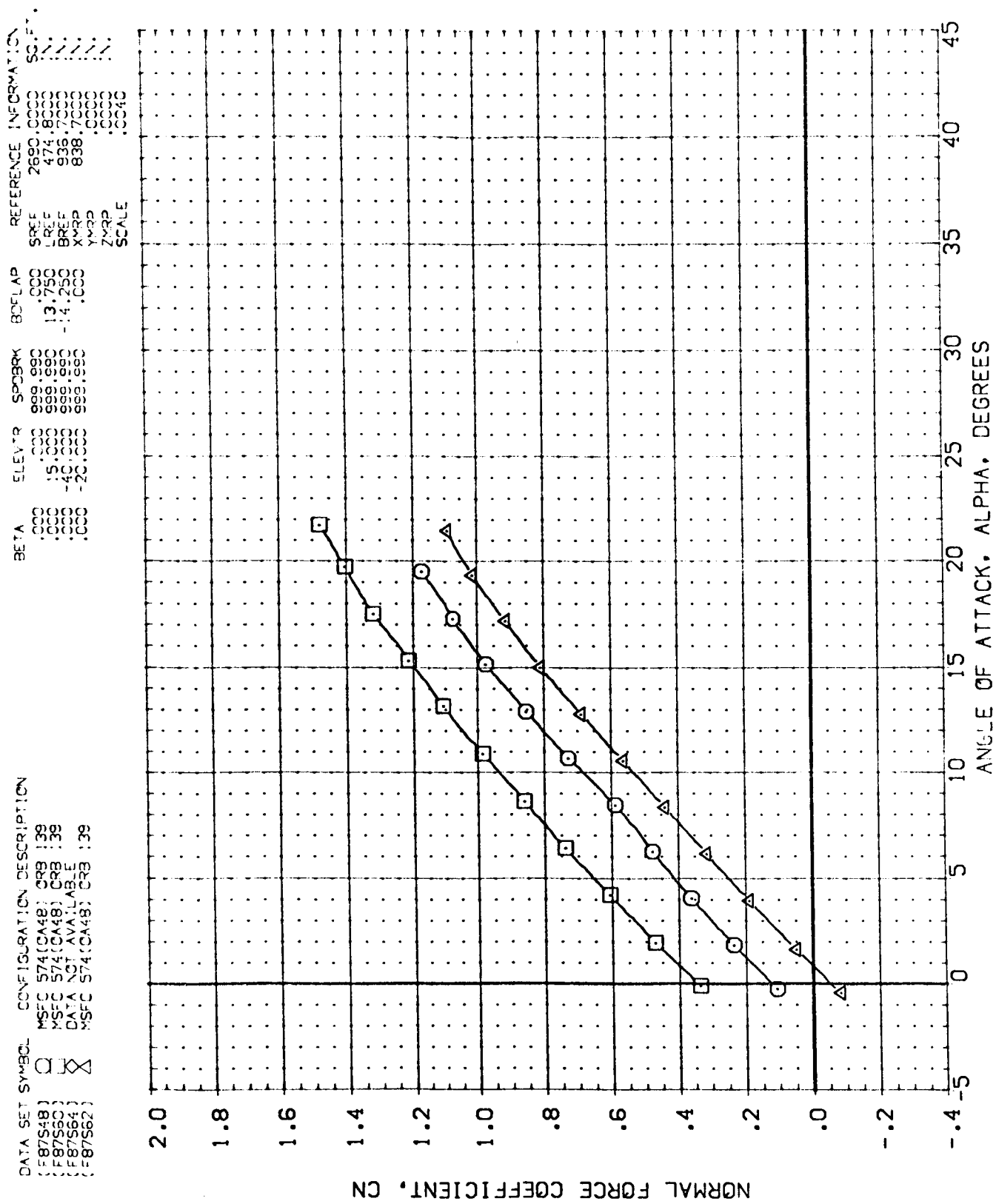


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)VACH = .90



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S48) MSFC 574(CA48) CRB 39

(F87S60) MSFC 574(CA48) CRB 39

(F87S64) MSFC 574(CA48) CRB 39

(F87S62) MSFC 574(CA48) CRB 39

BETA .000

ELEVTR .000

SPOBRK .000

BCFLAP .000

REFE INFORMATION

SREF 2690.0000 SC.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XREF 838.7000 IN.

YREF .0000

ZREF .0000

SCALE .0040

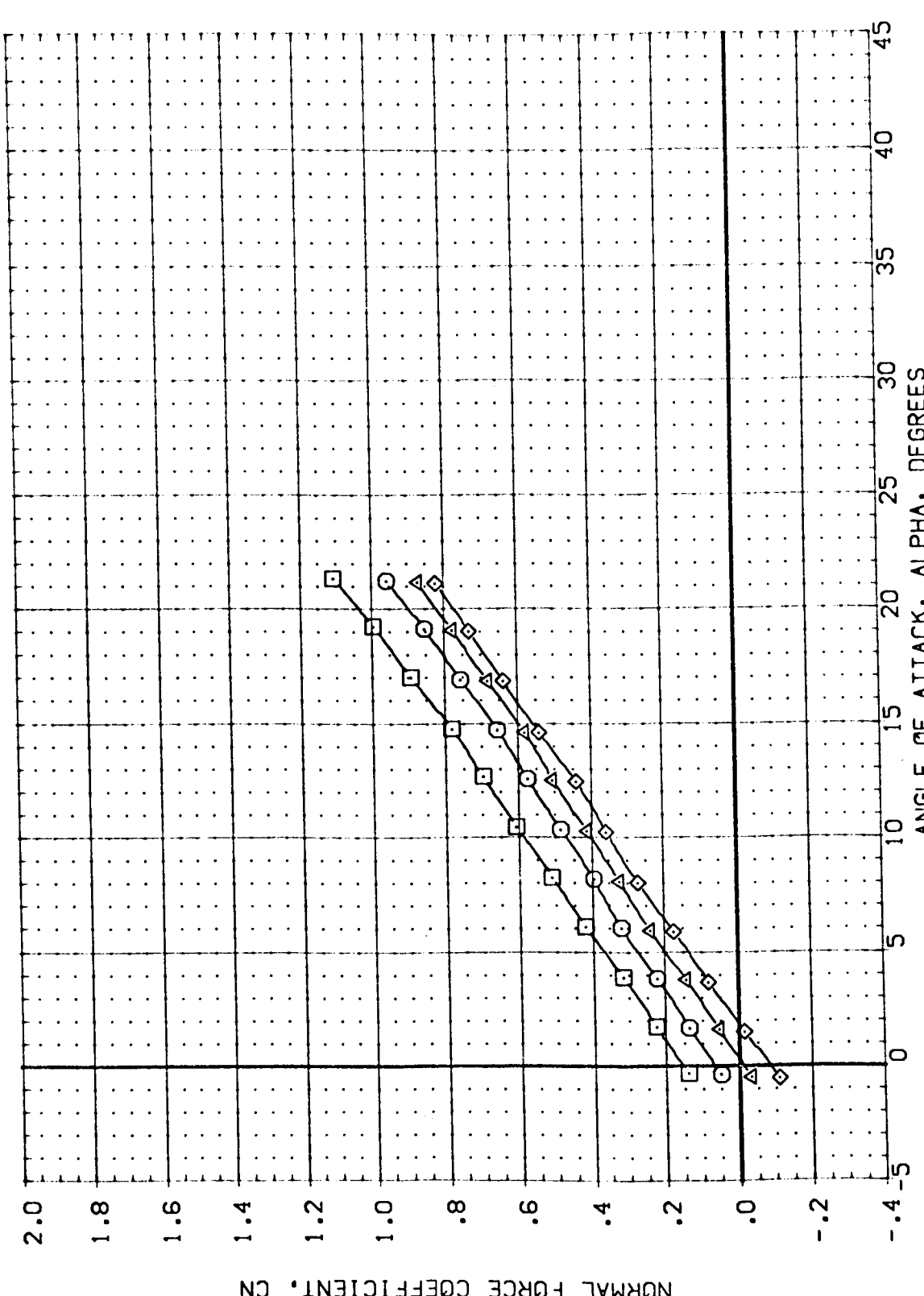


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COYACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BDFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.000 SC. 1.
(F87560)	MSFC 574(CA48) CRB 139	.000	.000	999.990	13.750	LREF 474.800 SC. 1.
(F87562)	MSFC 574(CA48) CRB 139	.000	.000	999.990	-14.250	BREF 936.000 SC. 1.
		.000	-40.000	999.990	.000	YMRP 838.700 SC. 1.
		.000	-20.000	999.990	.000	ZMRP .000 SC. 1.
						SCALE .0010

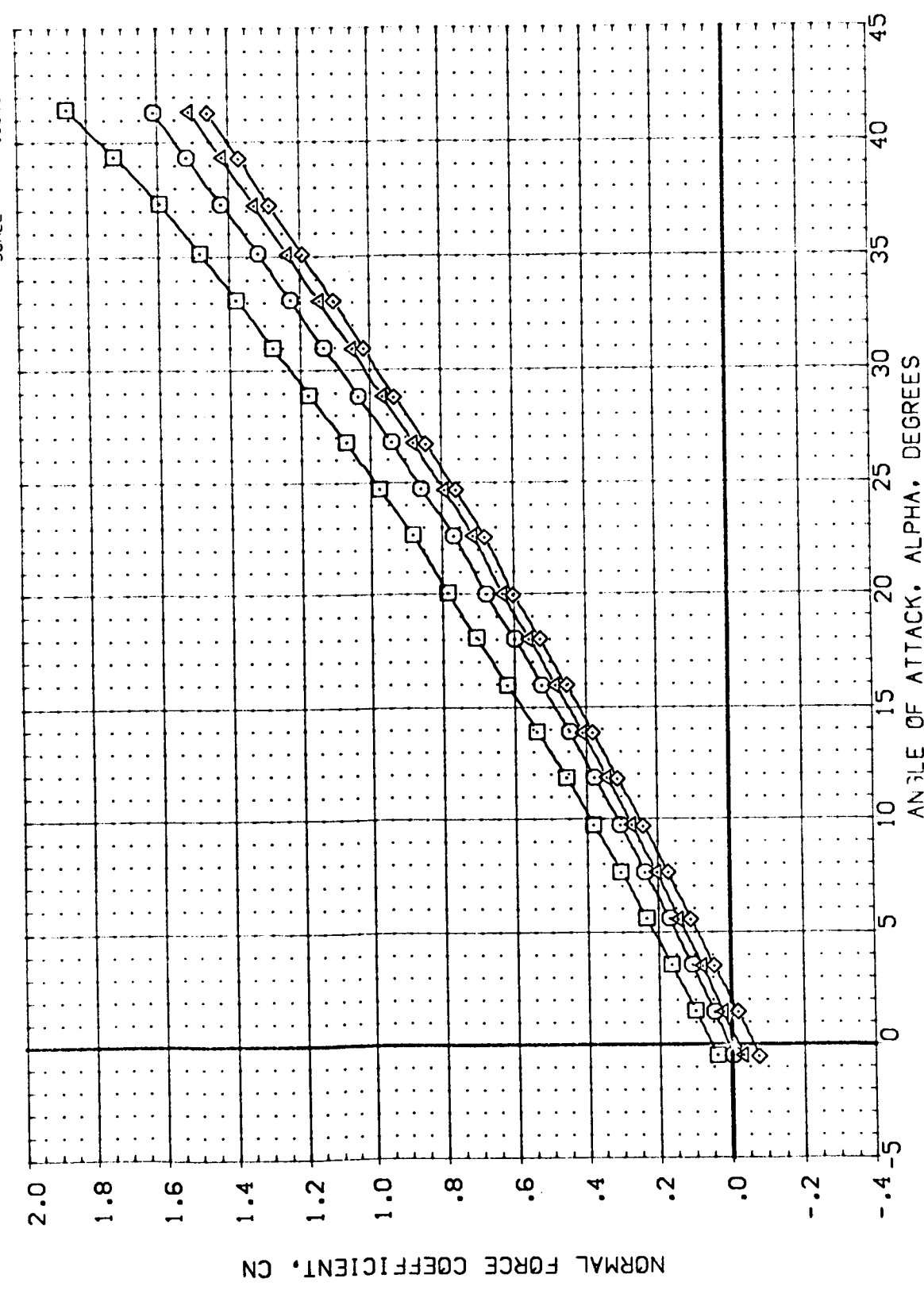


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOCLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87562)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	.000	LREF 474.8000 N.
(F87562)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	.000	BREF 936.7000 N.
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRD 838.7000 N.
					.000	YMRD .0000
					.000	ZMRD .0000
					.000	SCALE .0040

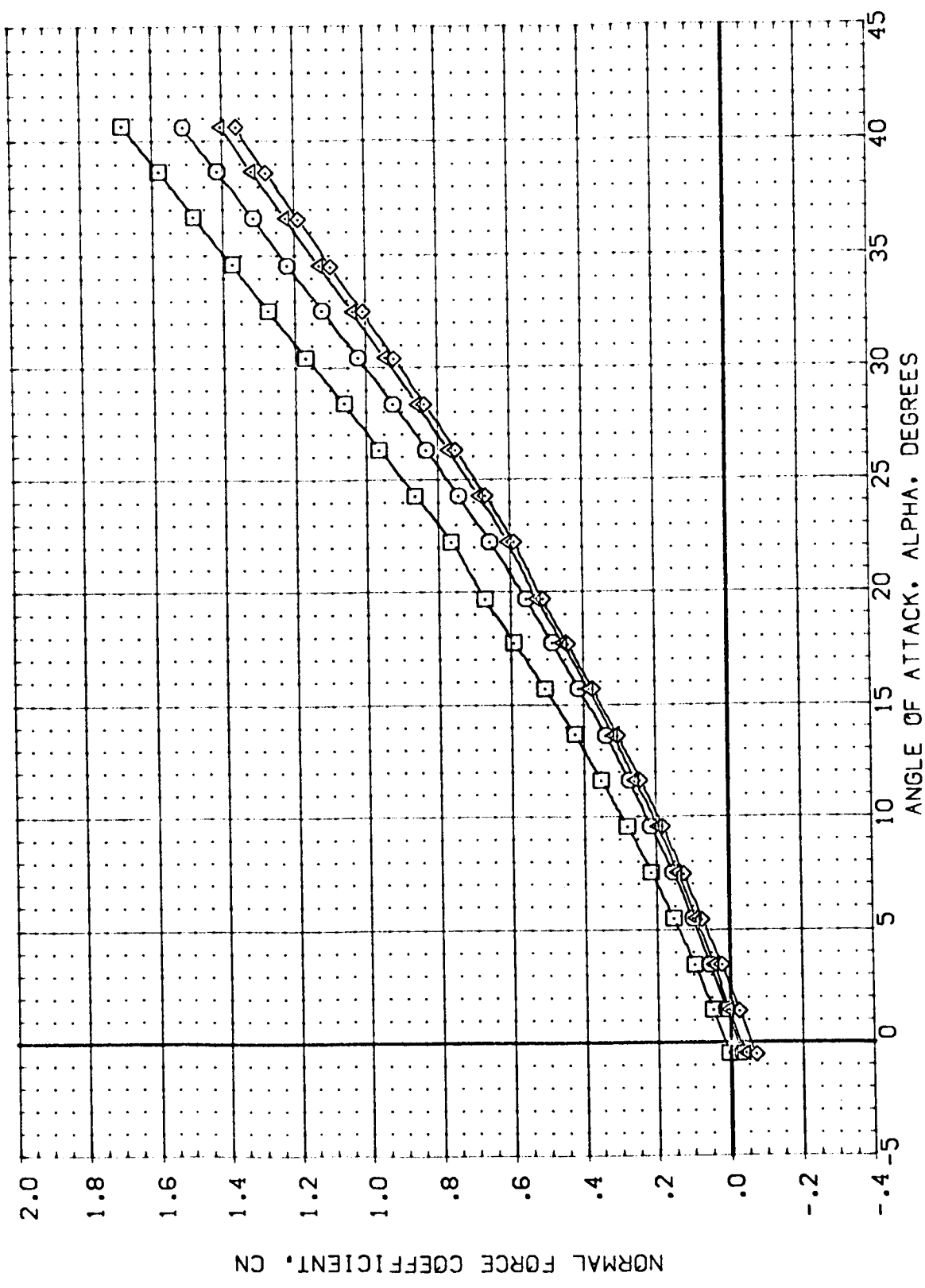


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CDMACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87568) MSFC 574(CA48) CR3 139
 (F87569) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR3 139

BETA ELEVTR SPDBRK BOELAP
 .000 .000 999.999 .000
 .000 15.000 999.999 13.750
 .000 -40.000 999.999 -14.250
 .000 -20.000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 REF 474.8000
 BREF 936.0000
 XREF 838.7000
 YREF .0000
 ZREF .0000
 SCALE .0040

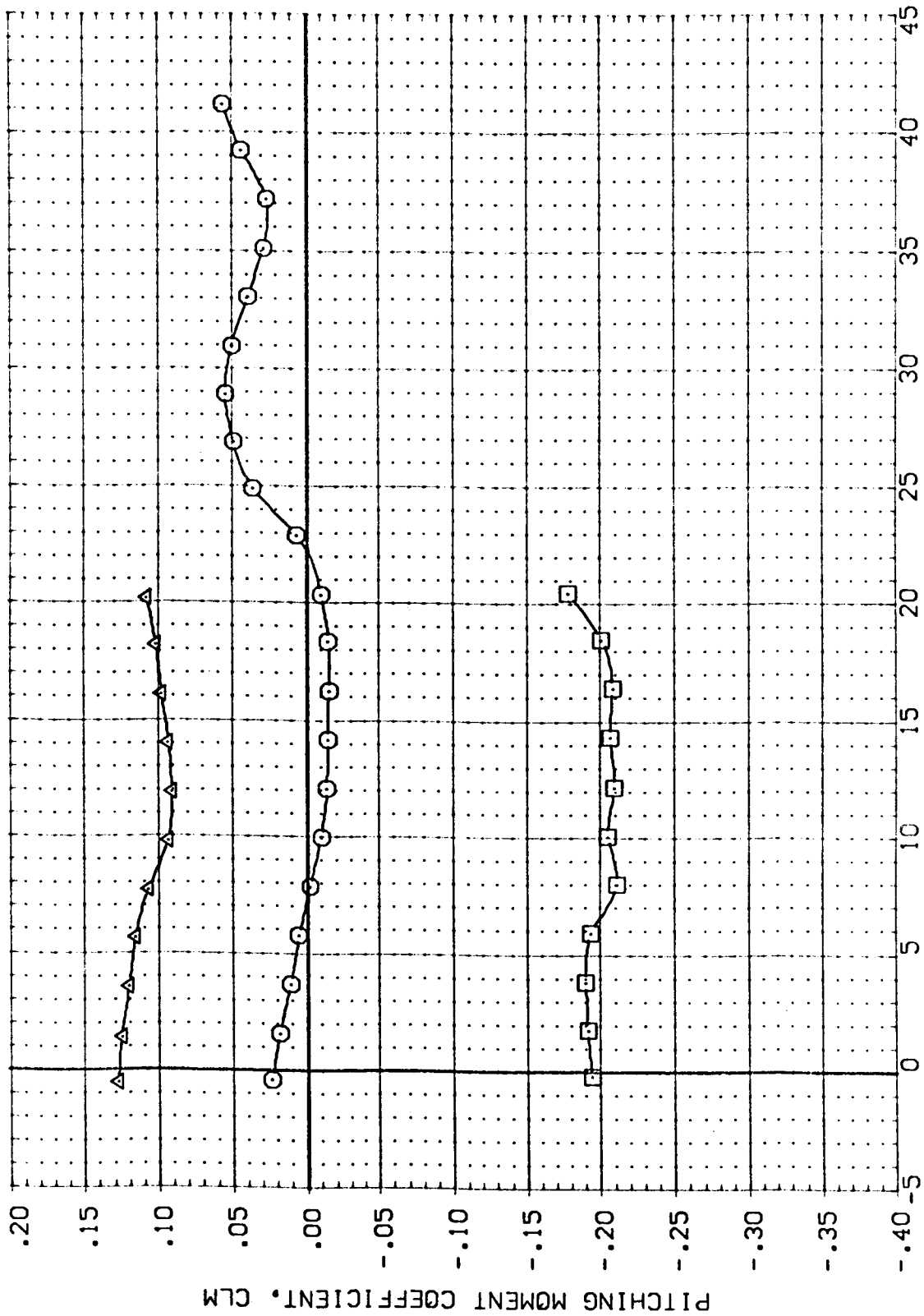


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CAMACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPOGRK	BOFLAP	REFERENCE INFORMATION	SC.F.
(F87548)	MSFC 574(CA48) CR3 139	.000	.000	999.990	.000	SREF	2690.0000
(F87550)	MSFC 574(CA48) CR3 139	.000	.000	999.990	13.750	LCFF	474.8000
(F87552)	DATA NOT AVAILABLE	.000	15.000	999.990	-14.200	BRFF	938.7000
	MSFC 574(CA48) CR3 139	.000	-40.000	999.990	.000	YMRP	838.7000
		.000	-20.000	999.990	.000	ZMRP	.0000
						SCALE	.0040

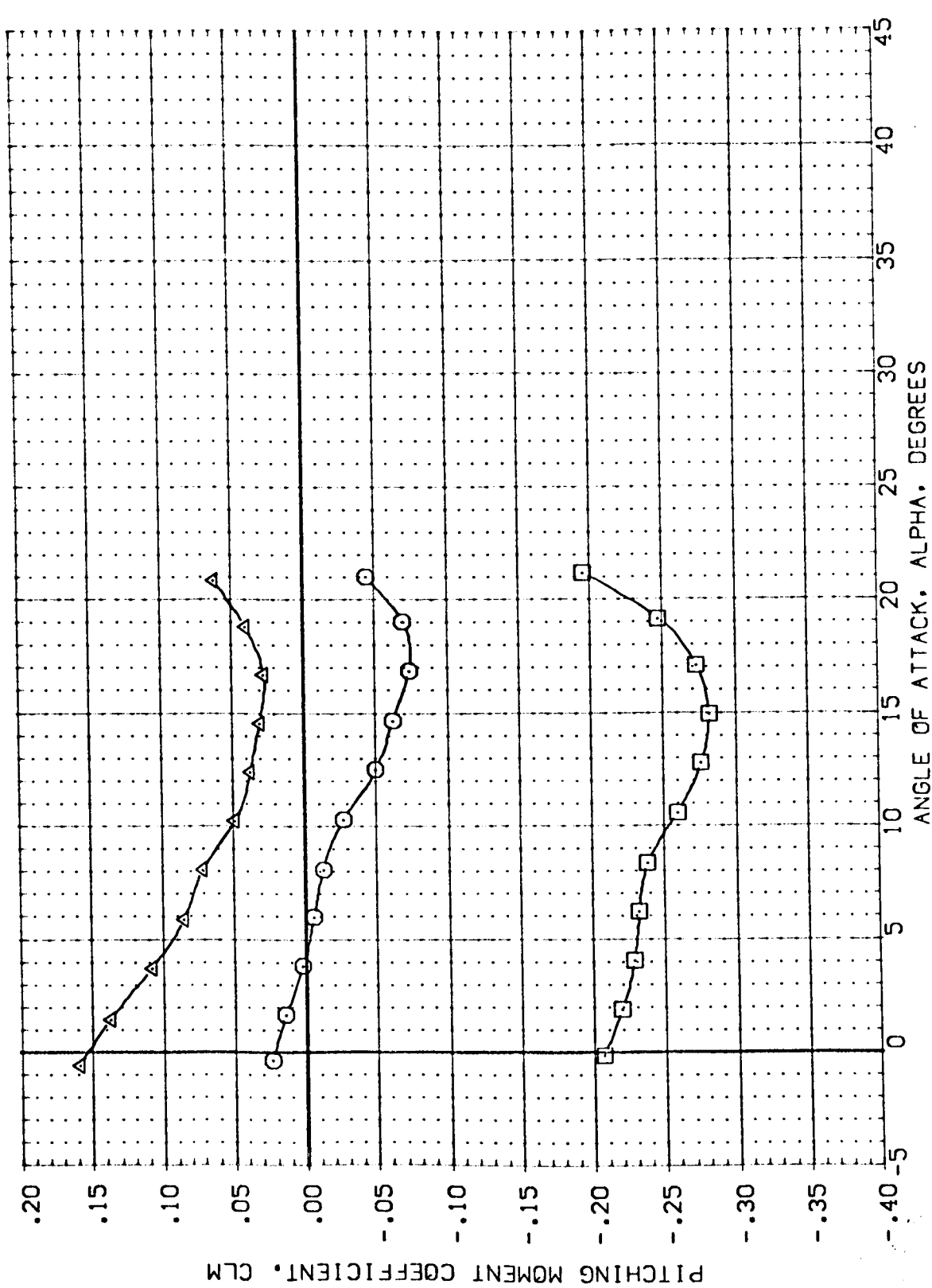


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) VACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA18) CRB 139	.000	.000	999.990	.000	SPLE 2690.0000
(F87550)	MSFC 574(CA18) CRB 139	.000	.000	999.990	13.750	REF 474.8000
(F87564)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.200	REF 936.7000
(F87562)	MSFC 574(CA18) CRB 139	.000	-20.000	999.990	.000	REF 838.0000
					SCALE	SCALE

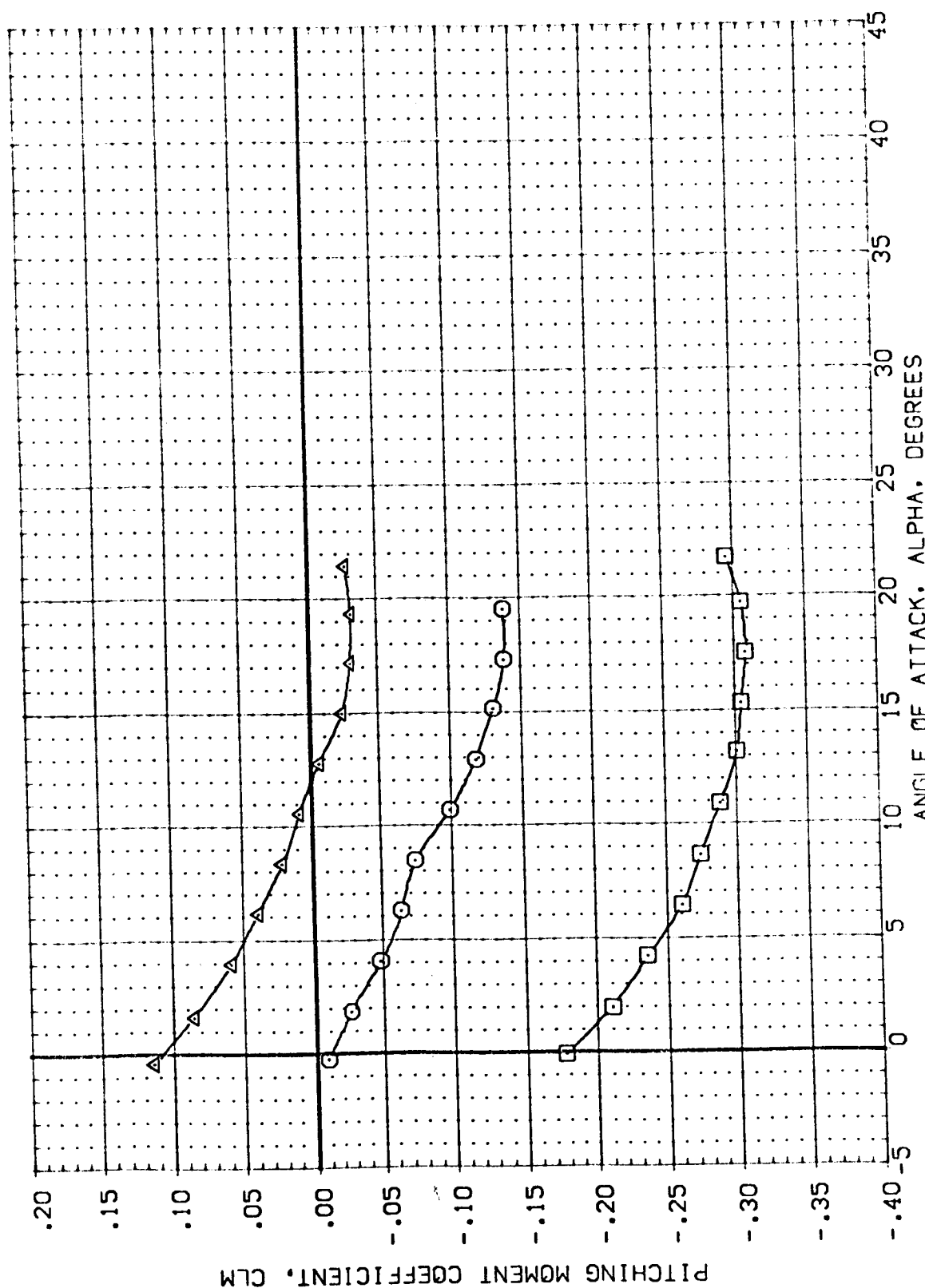


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COYACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSEC 574(CA48) CRB 139	.000	.000	999.999	.000	SREF 7690.0000
(F87S60)	MSEC 574(CA48) CRB 139	.000	.000	999.999	.000	LREF 474.8000
(F87S64)	MSEC 574(CA48) CRB 139	.000	.000	999.999	.000	BREF 936.7000
(F87S62)	MSEC 574(CA48) CRB 139	.000	.000	999.999	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

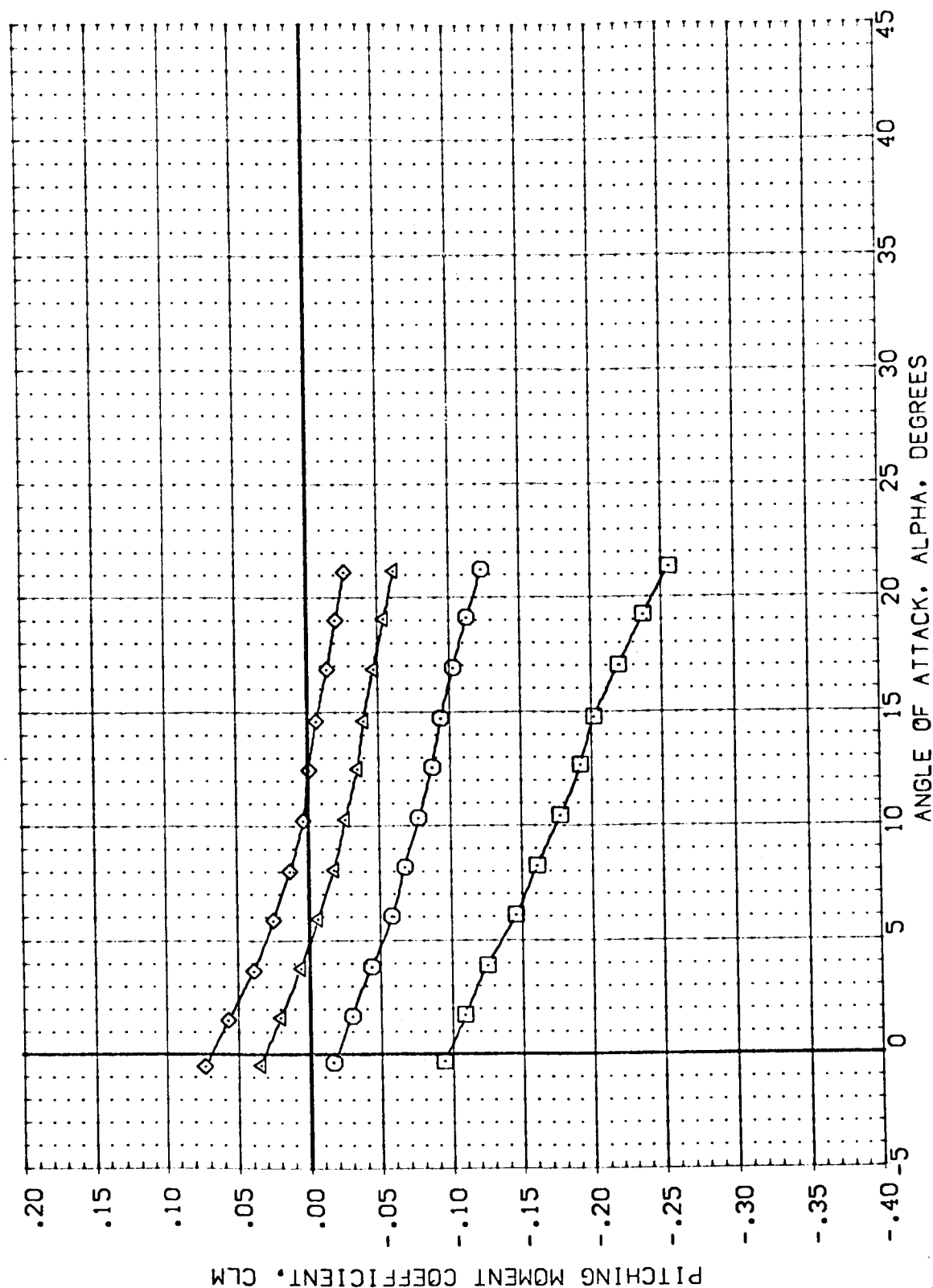


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) ORB 139
 (F87S60) MSFC 574(CA48) ORB 139
 (F87S64) MSFC 574(CA48) ORB 139
 (F87S62) MSFC 574(CA48) ORB 139

BETA ELEVTR SPOGRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XREF 838.7000
 .000 .000 .000 .000 ZREF .0000
 .000 .000 .000 .000 SCALE .0010

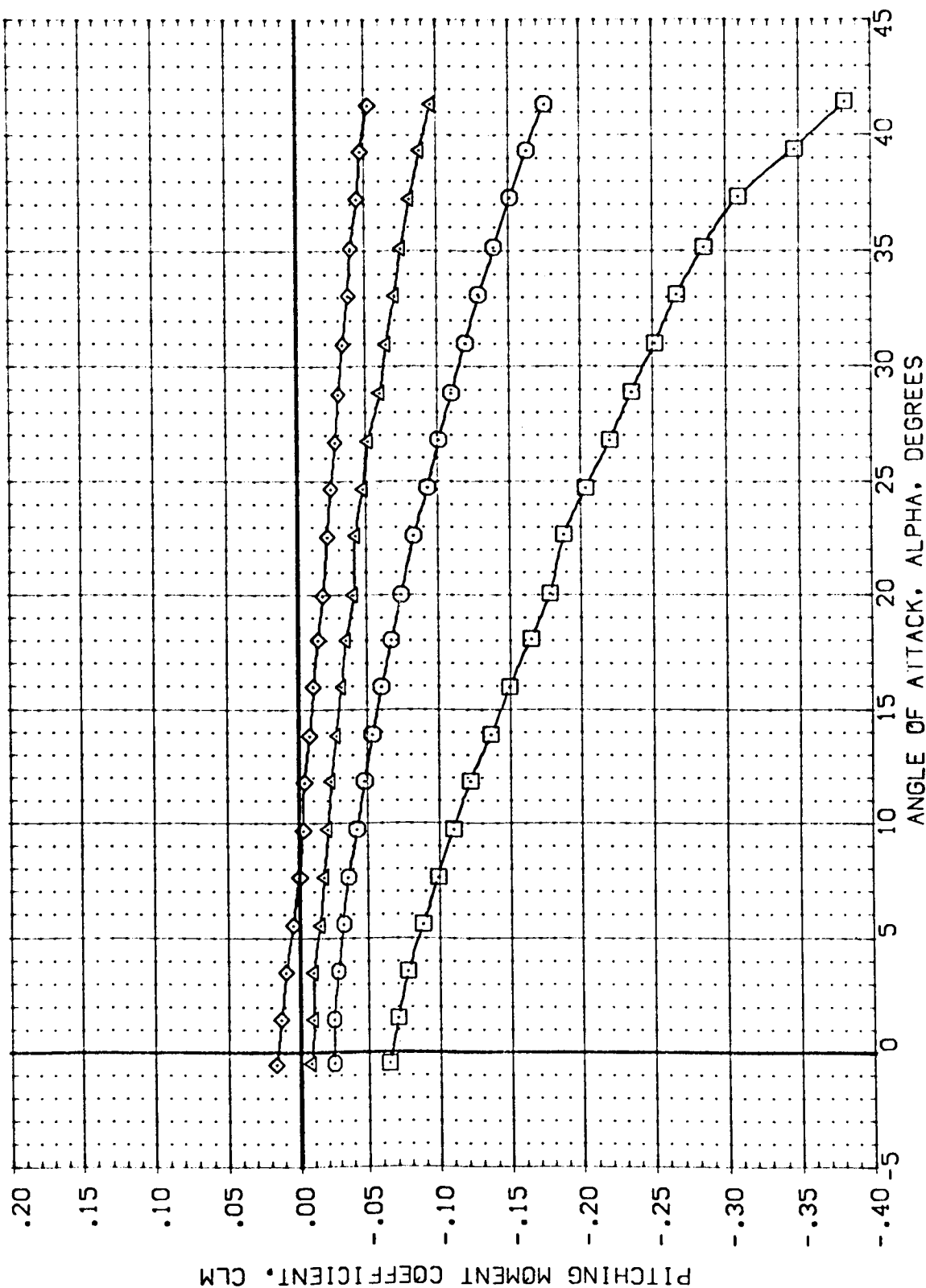


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) 0 574 (CA48) CR3 39
 (F87560) X 574 (CA48) CR3 39
 (F87564) 0 574 (CA48) CR3 39
 (F87562) X 574 (CA48) CR3 39

BETA ELEVTR SDOBRK BOFLAP
 .000 .000 .000 .000
 .000 15.000 .000 .000
 .000 -40.000 .000 .000
 .000 -20.000 .000 .000

REFERENCE INFORMATION
 SREF 2690.0000 53.57
 .REF 474.8000
 .REF 936.7000
 .REF 838.7000
 XREF .0000
 YREF .0000
 ZREF .0000
 SCALE .0000

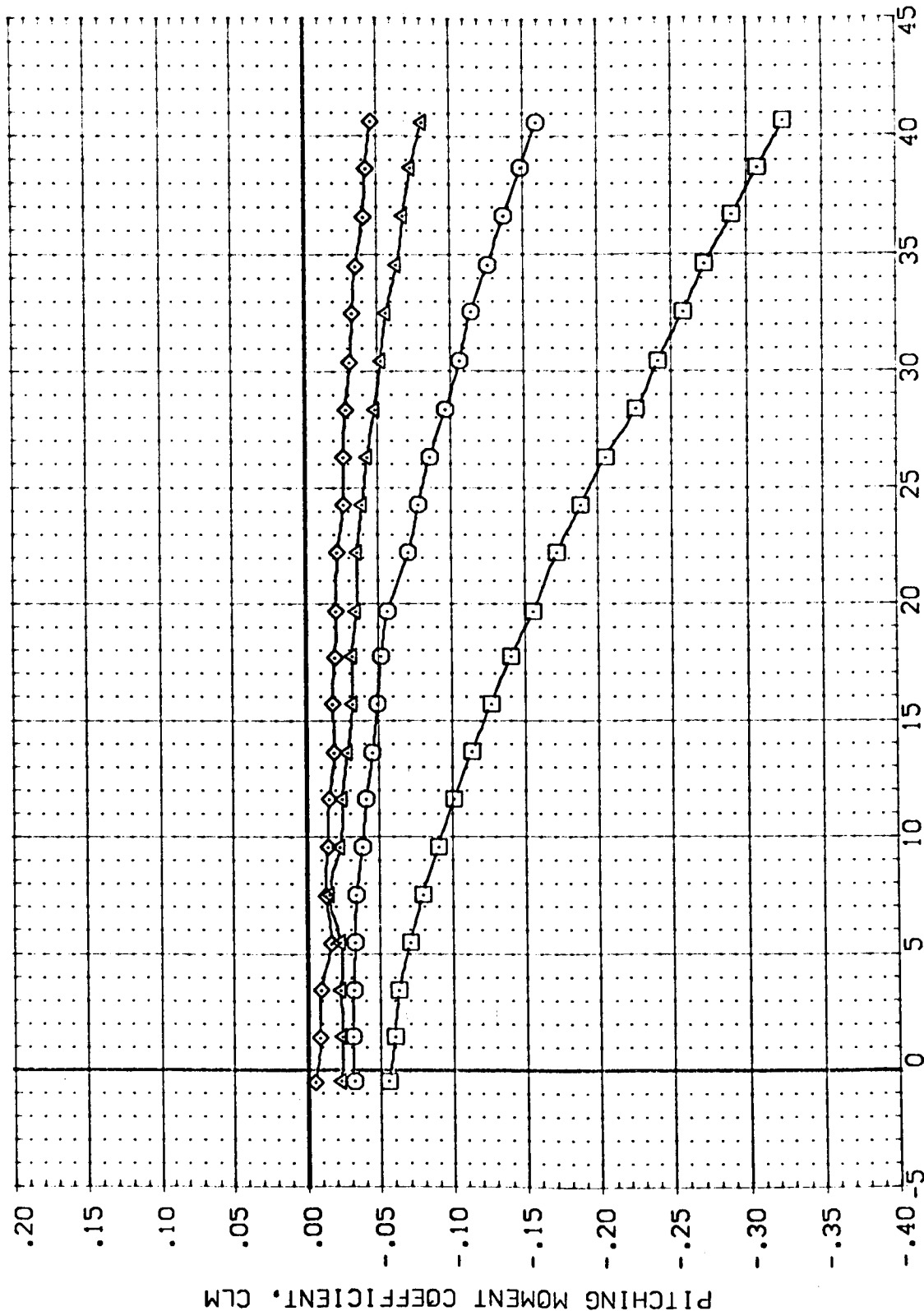
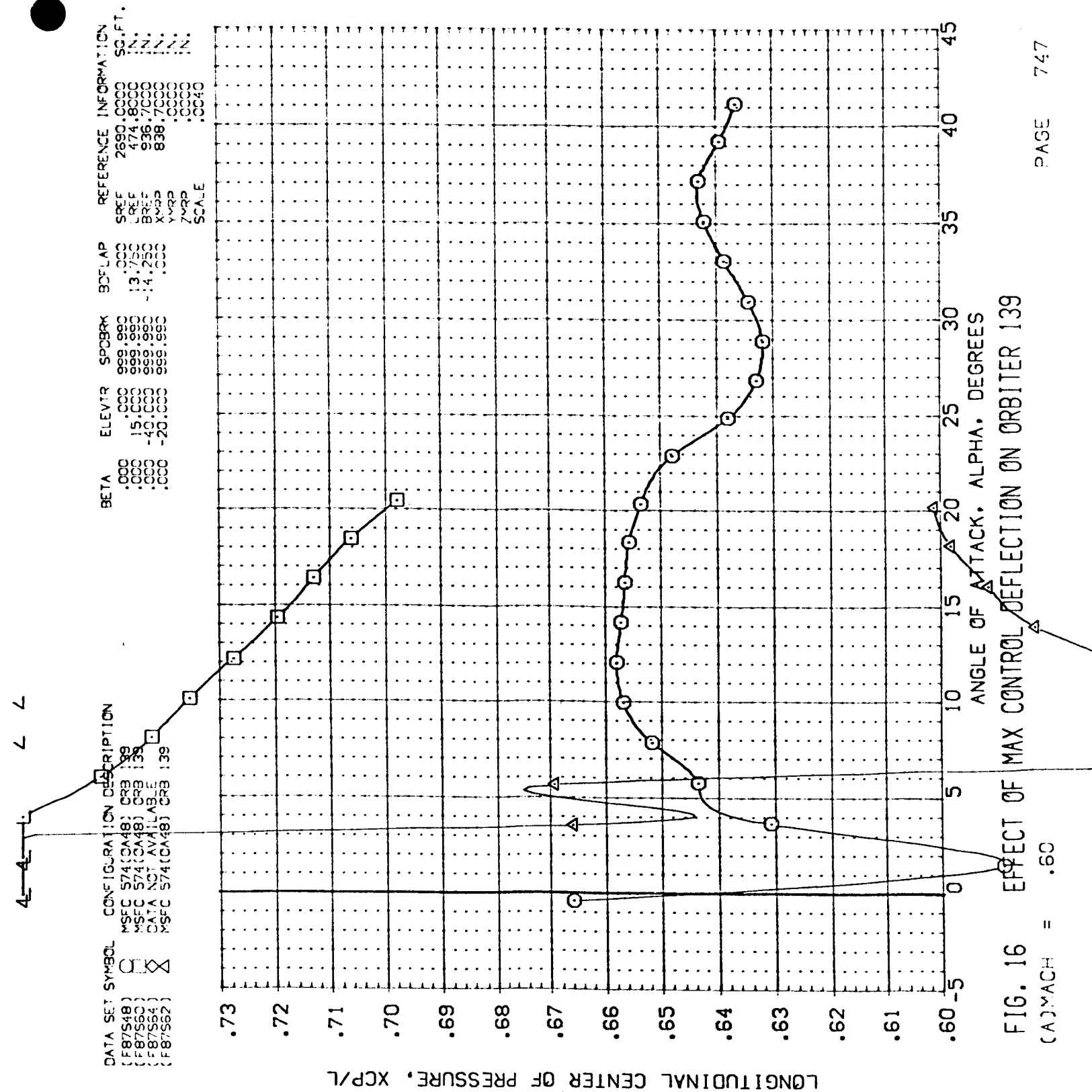


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S62)	MSC 574(CA48) CRB 139	.000	.000	999.990	13.750	LREF 474.8000
(F87S61)	DATA NOT AVAILABLE	.000	15.000	999.990	-14.250	BREF 936.70000
(F87S62)	MSC 574(CA48) CRB 139	.000	-40.000	999.990	.000	XMRP 838.70000
			-20.000	999.990	.000	YMRP .00000
						ZMRP .00000
						SCALE .0010

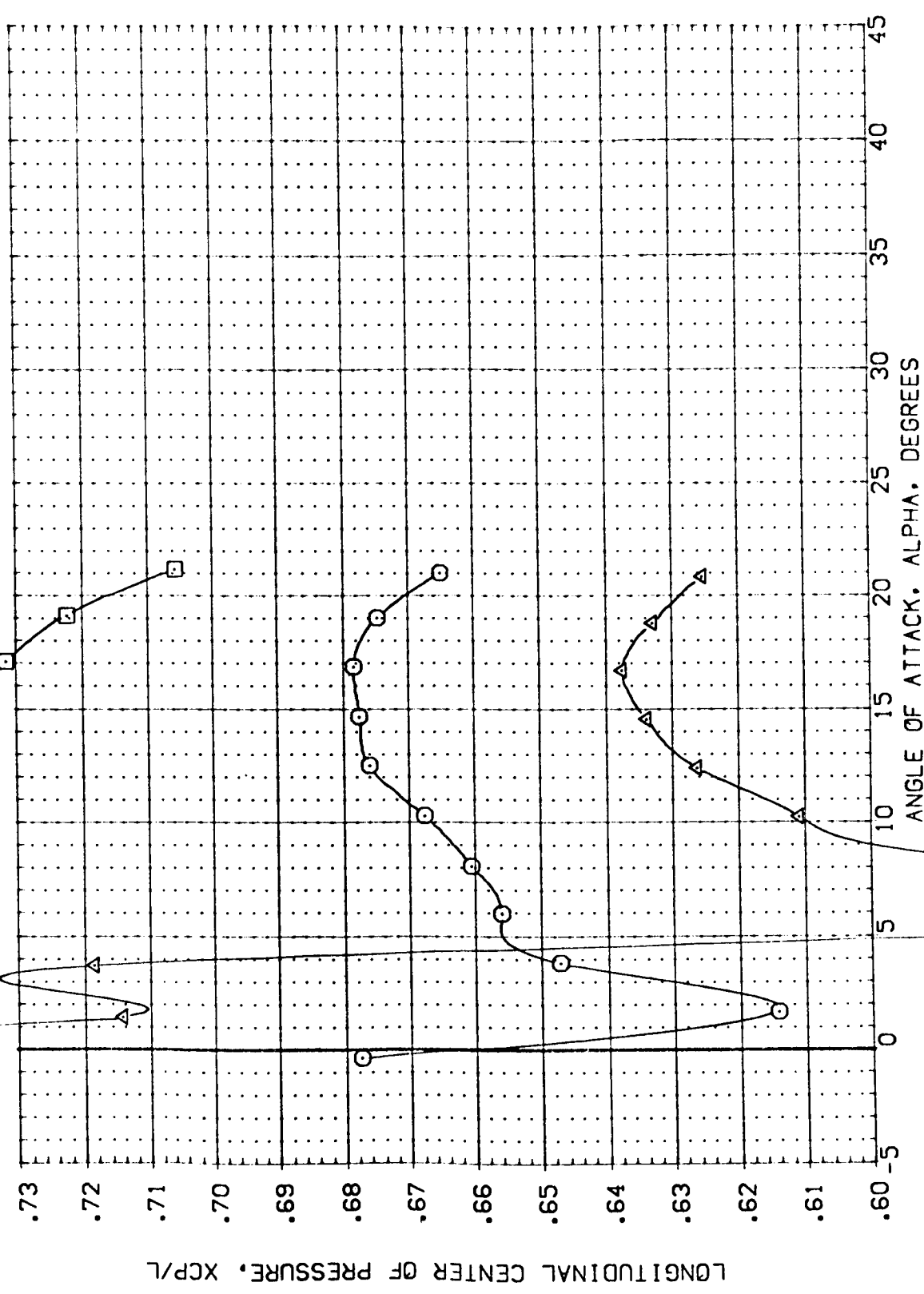
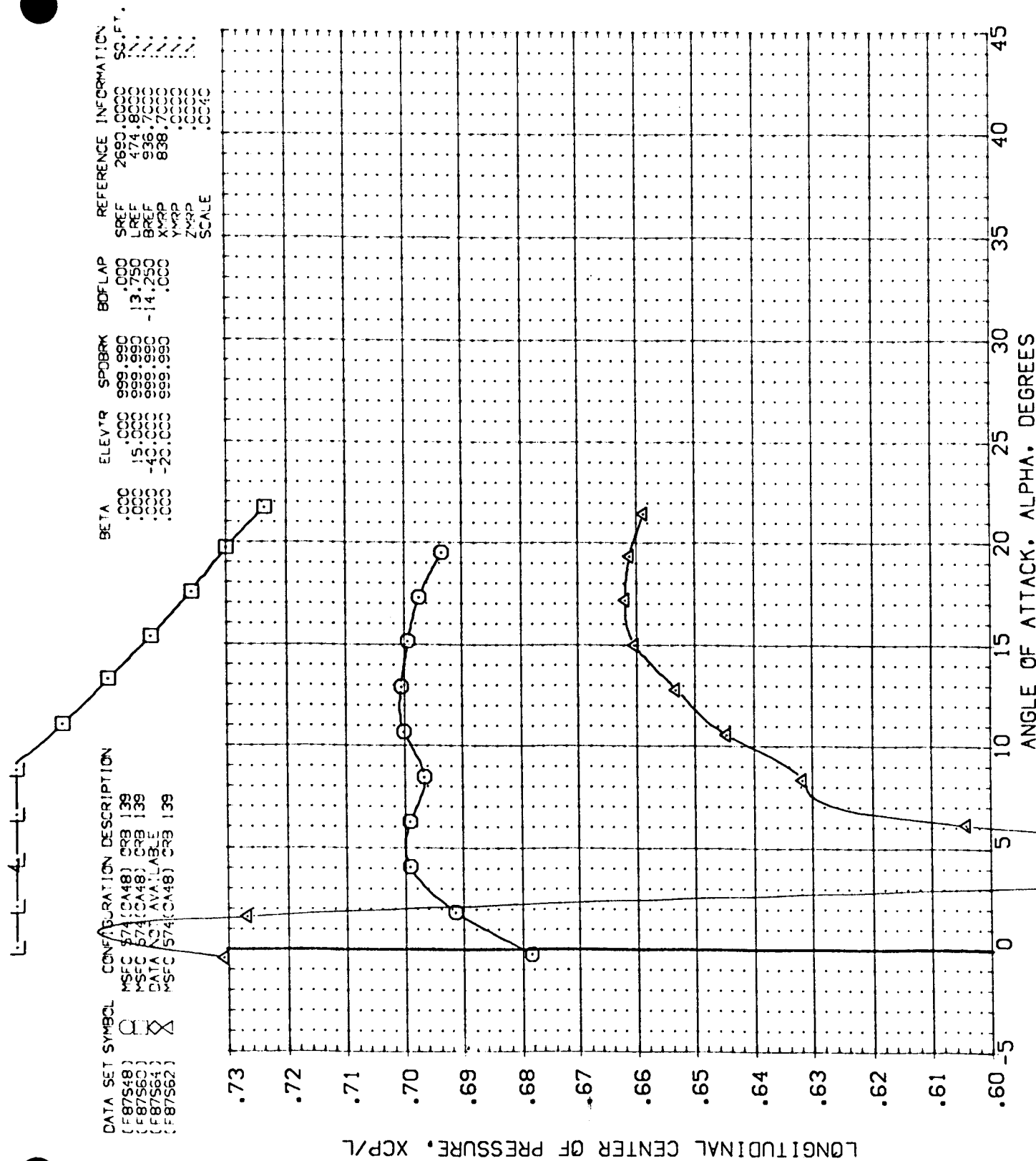


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)YACH = .90



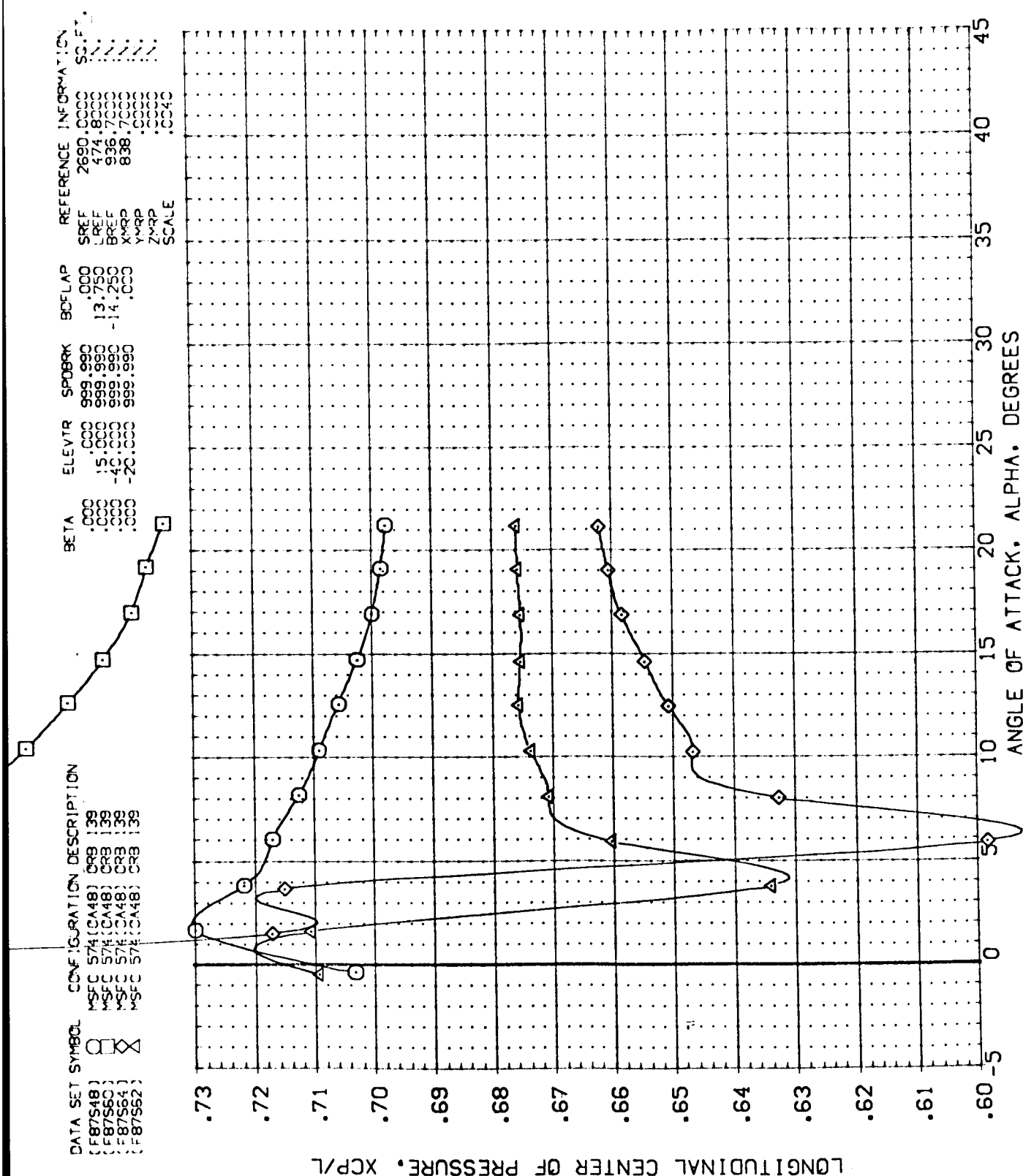


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574 (CA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSFC 574 (CA48) ORB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87564)	MSFC 574 (CA48) ORB 139	.000	-40.000	999.990	-14.250	BREF 936.5000
(F87562)	MSFC 574 (CA48) ORB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

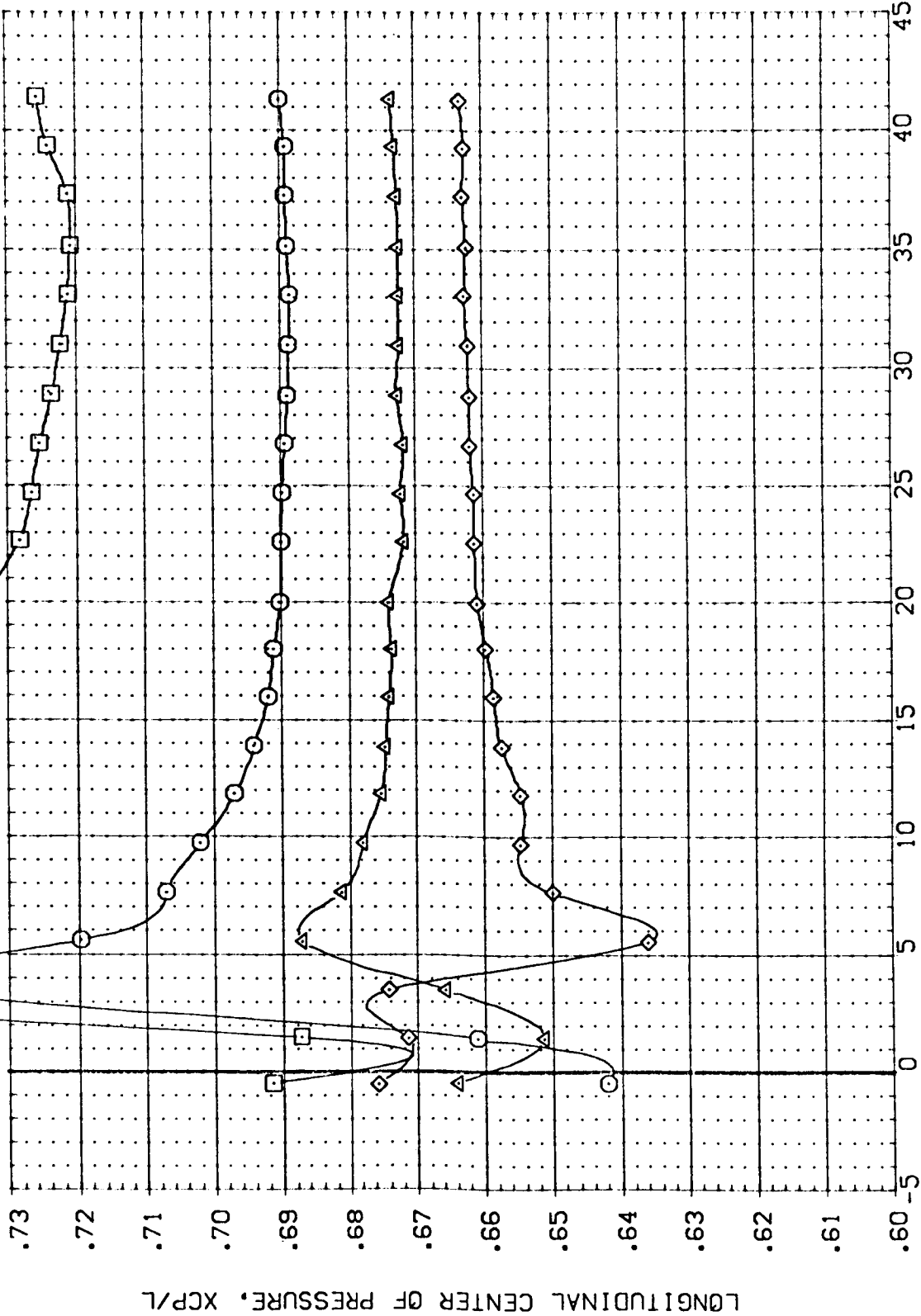


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(E)MACH = 2.99

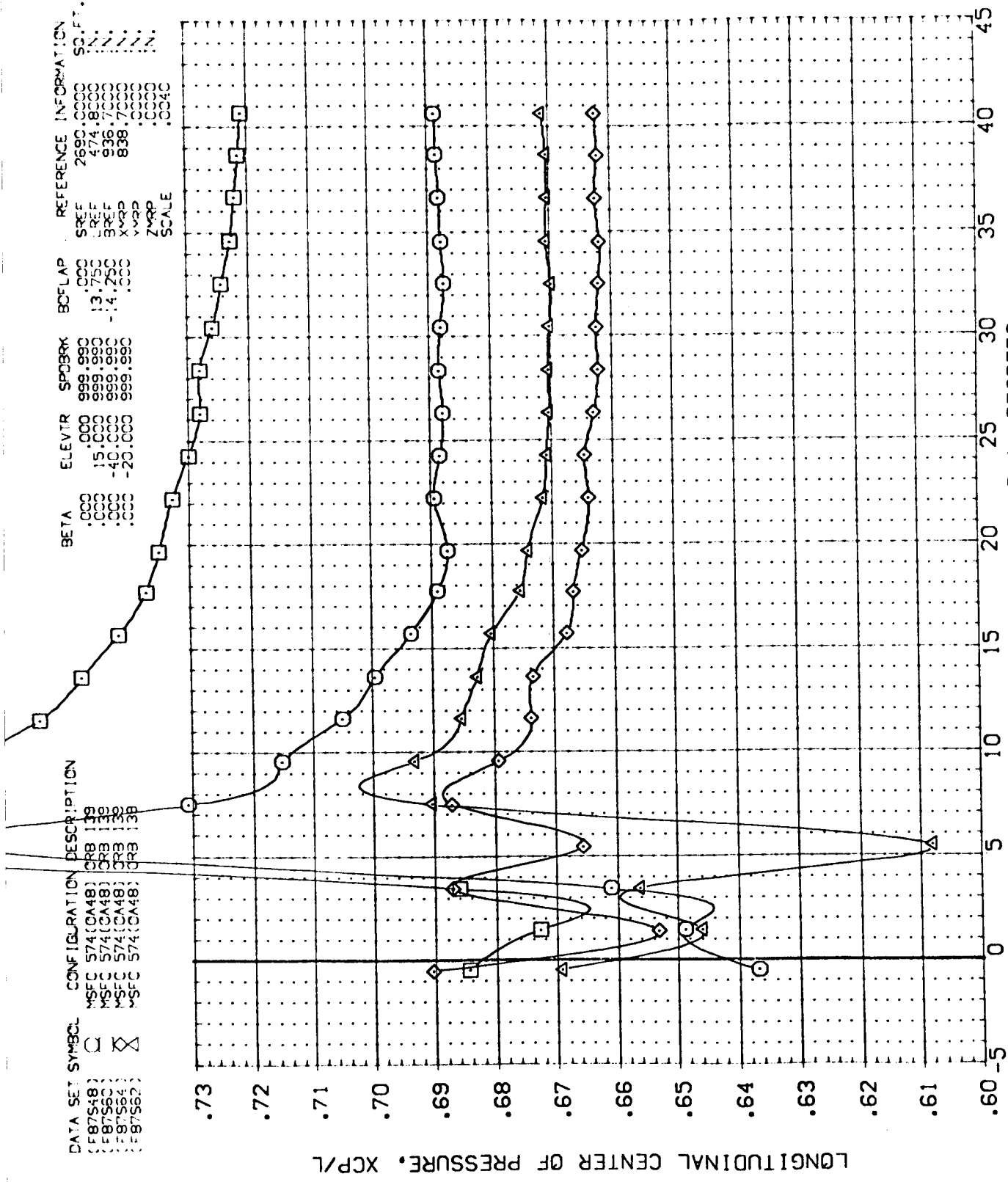


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CRB 139
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 YMRP .0000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

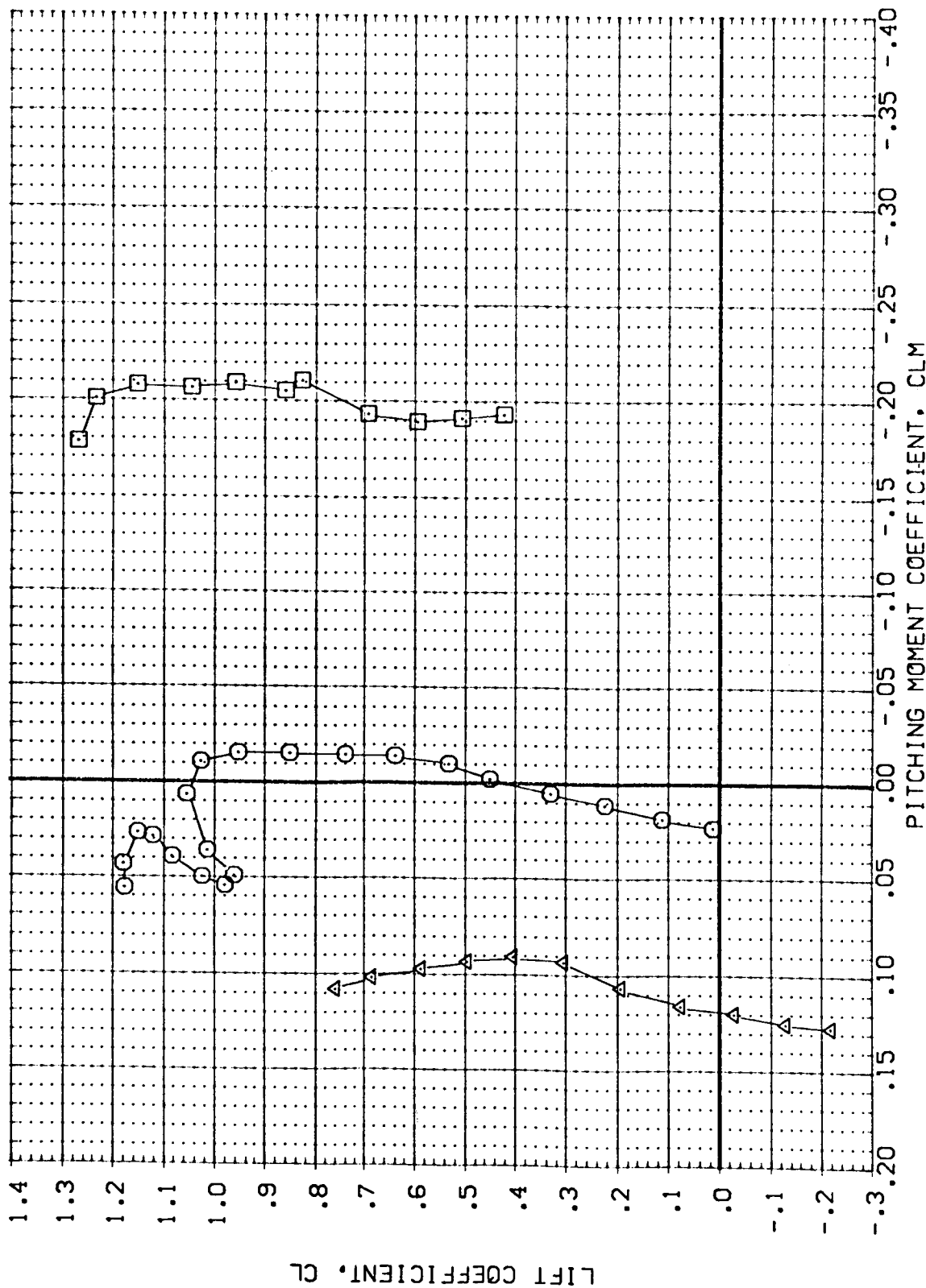


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{+87548}	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
{-87560}	MSFC 574(CA48) CRB 139	.000	.5.000	999.990	13.750	LREF 474.8000
{-87564}	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
{-87562}	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 938.7000
					.000	ZMRP .0000
					.000	SCALE .0040

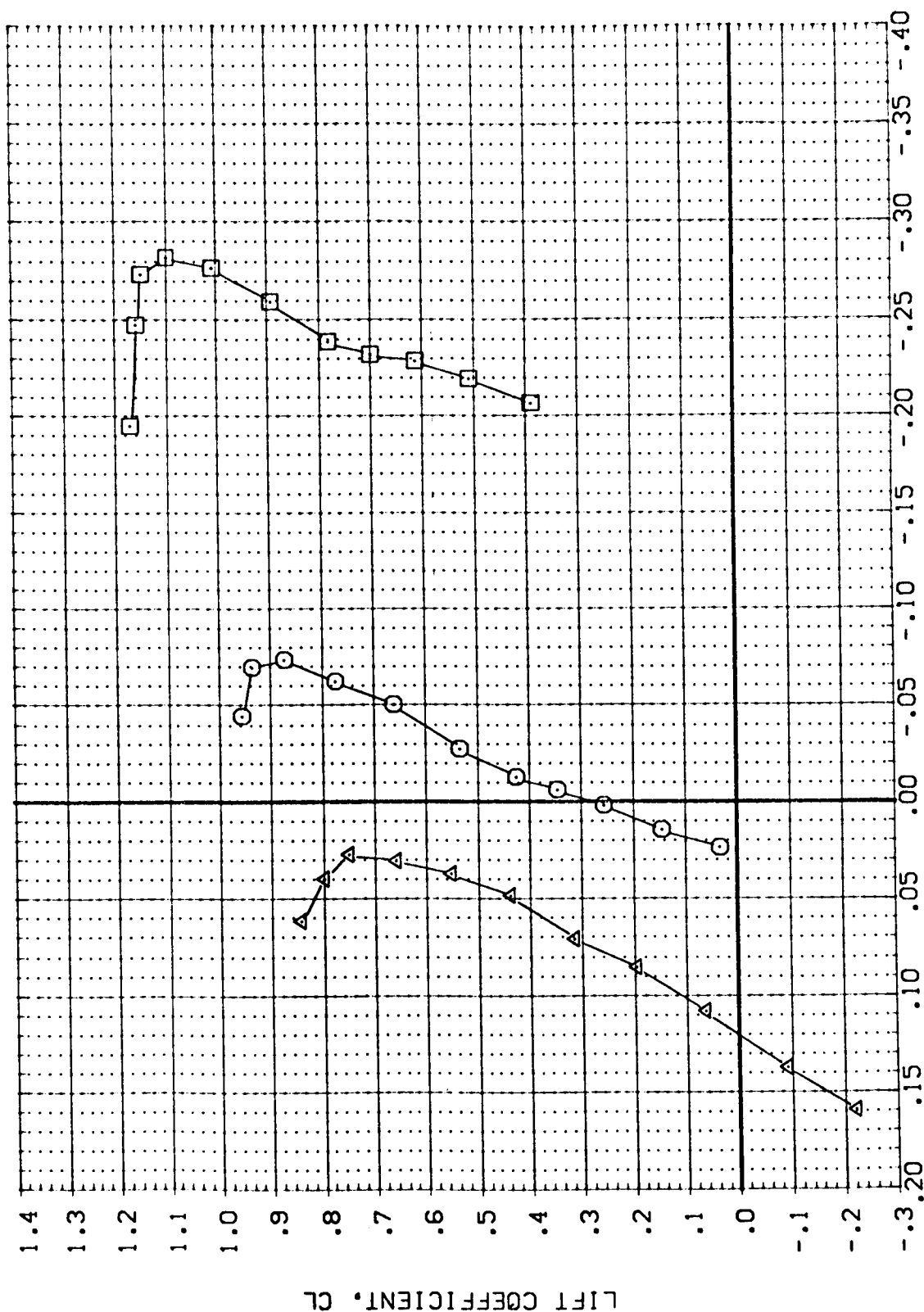


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87548)	MSEC 574(OA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSEC 574(OA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87564)	MSEC 574(OA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87562)	MSEC 574(OA48) CRB 139	.000	-20.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0040

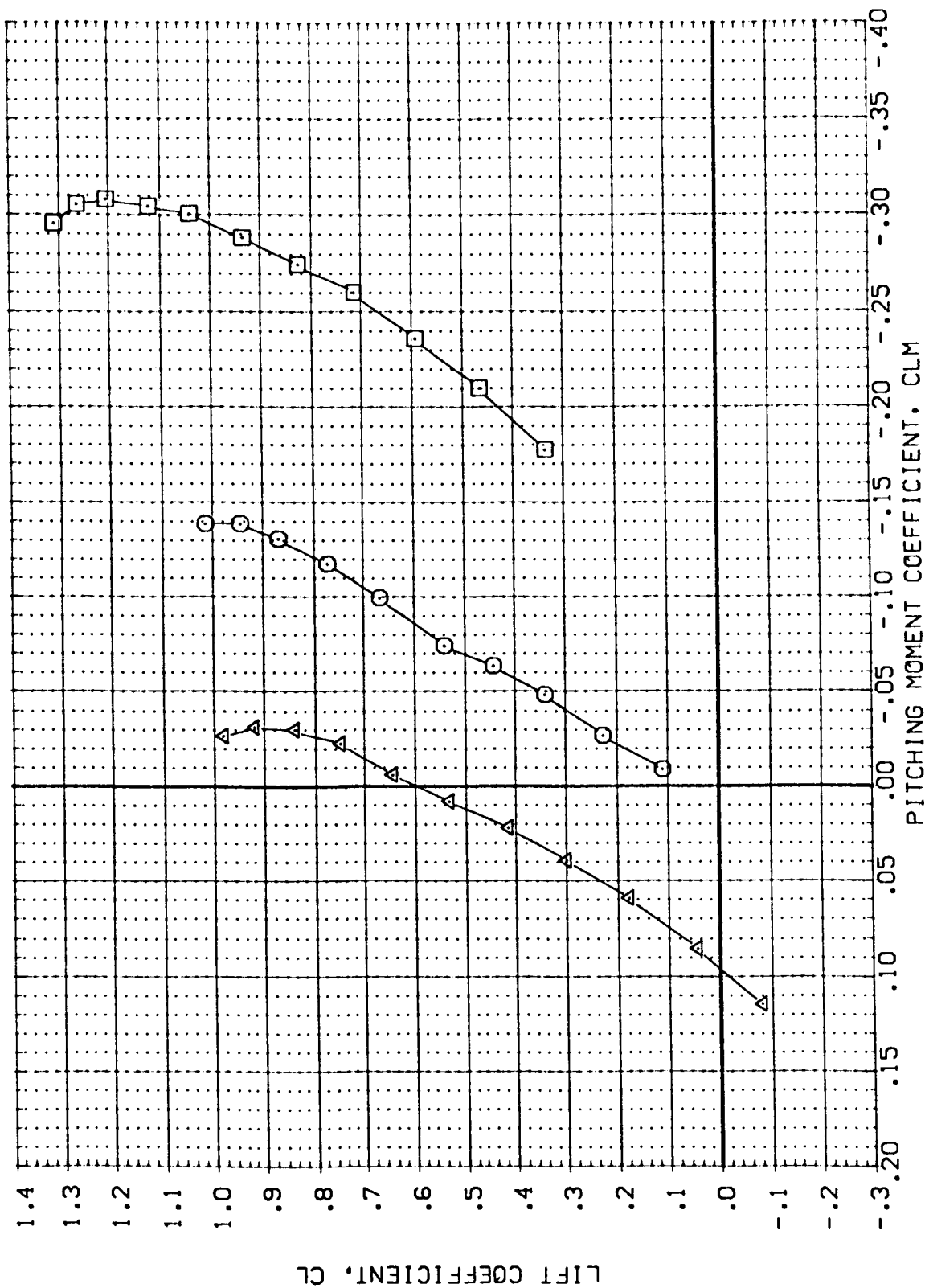


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(OA48) CR3 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S62)	MSFC 574(OA48) CR3 139	.000	15.000	999.990	13.750	UREF 474.8000
(F87S64)	MSFC 574(OA48) CR3 139	.000	-40.000	999.990	-14.250	BREF 935.7000
(F87S62)	MSFC 574(OA48) CR3 139	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

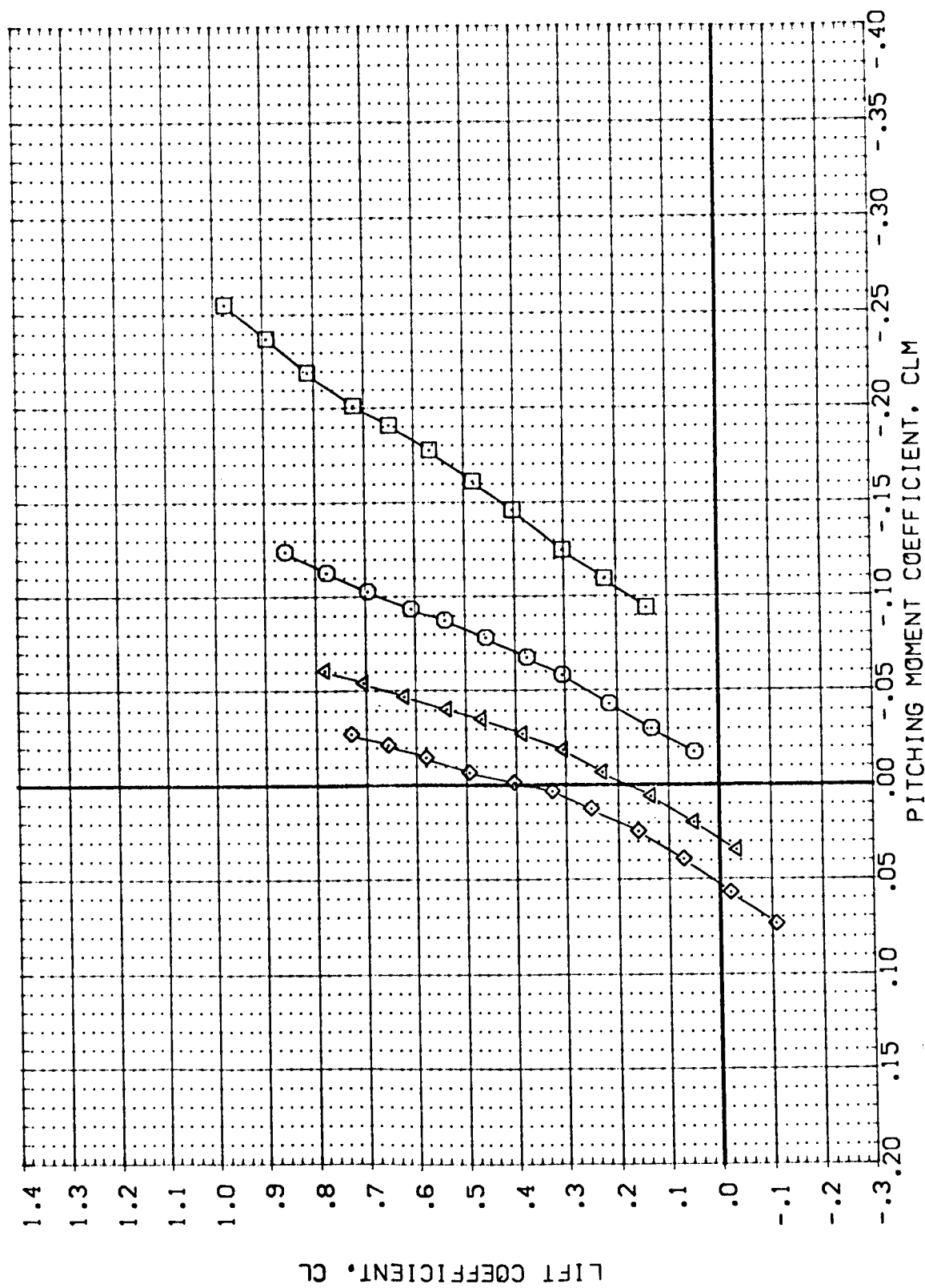


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87S50)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S52)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S54)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S56)		.000				YMRP .0000
(F87S58)		.000				ZMRP .0000
(F87S60)		.000				SCALE .0040

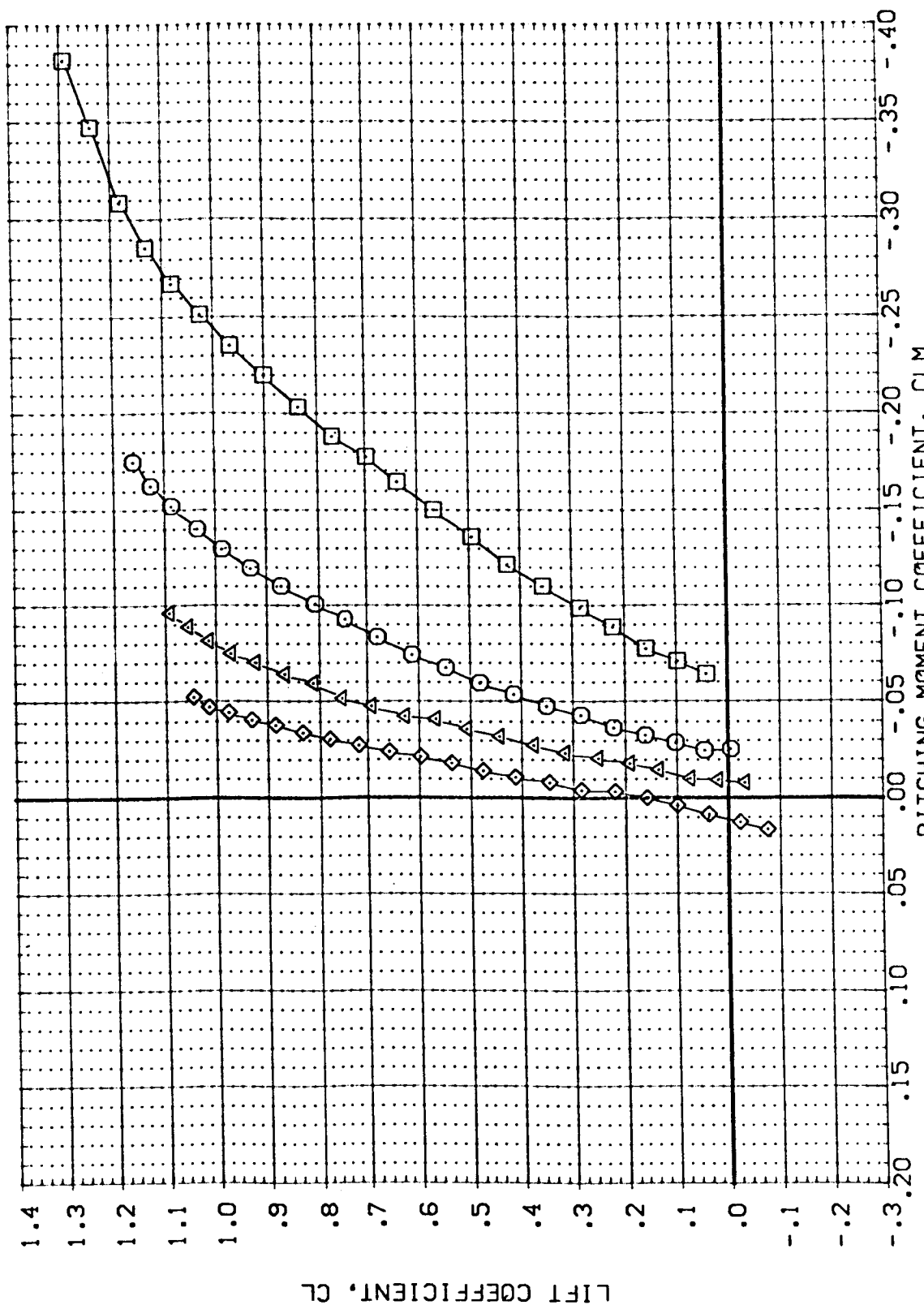


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87548)	WS-C 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690 SC.F.T.
(F87560)	WS-C 574(CA48) CRB 139	.000	.000	999.990	13.750	LREF 474 SC.F.T.
(F87564)	WS-C 574(CA48) CRB 139	.000	.000	999.990	-14.750	BREF 936 SC.F.T.
(F87562)	WS-C 574(CA48) CRB 139	.000	.000	999.990	.000	XVREF 838 SC.F.T.
						YVREF 7000 SC.F.T.
						ZVREF 10000 SC.F.T.
						SCALE 10000

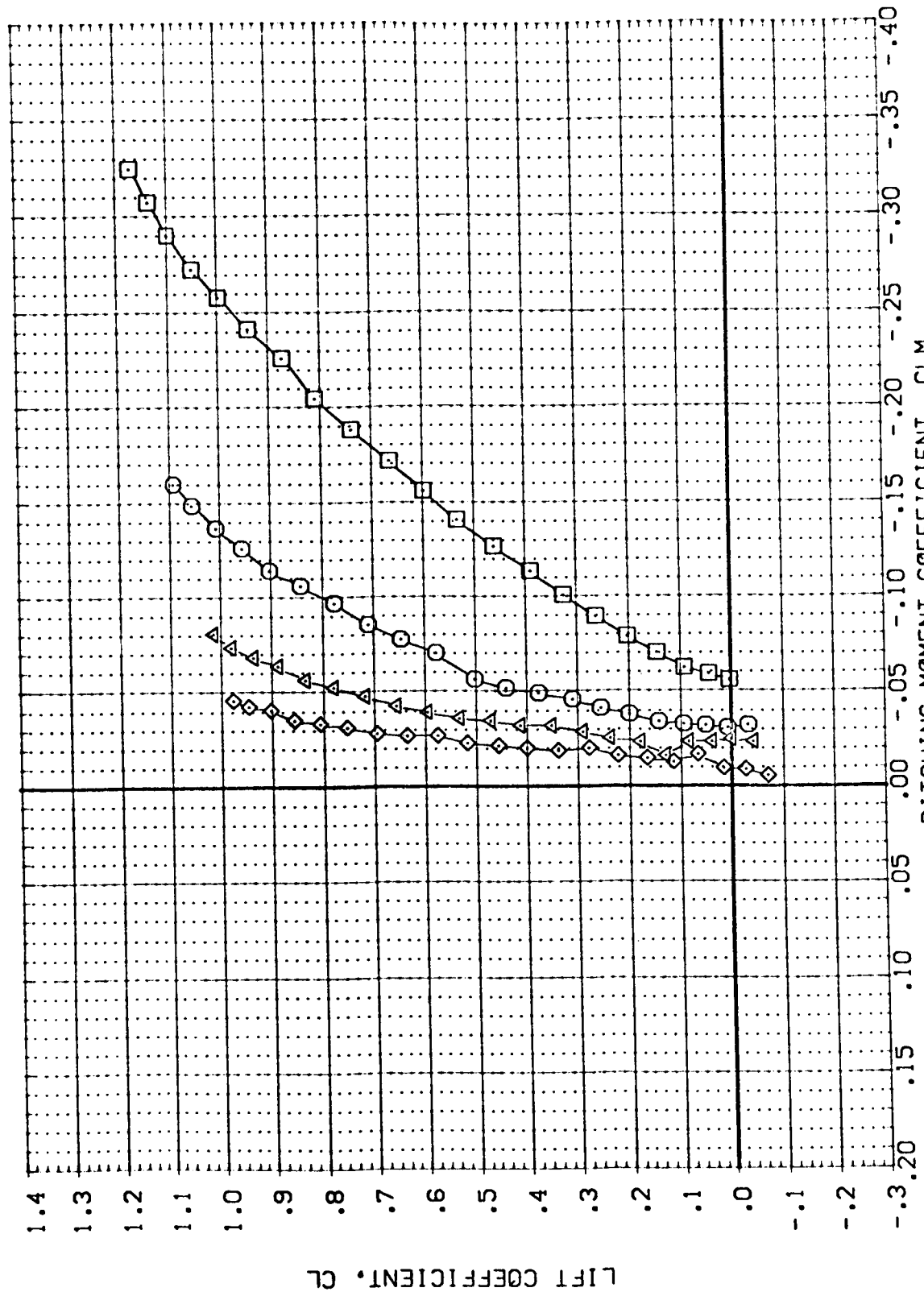


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 [F]MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CRB 139
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPDRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 YMRP .0000
 .000 .000 .000 ZMRP .0000
 .0000 SCALE .0040

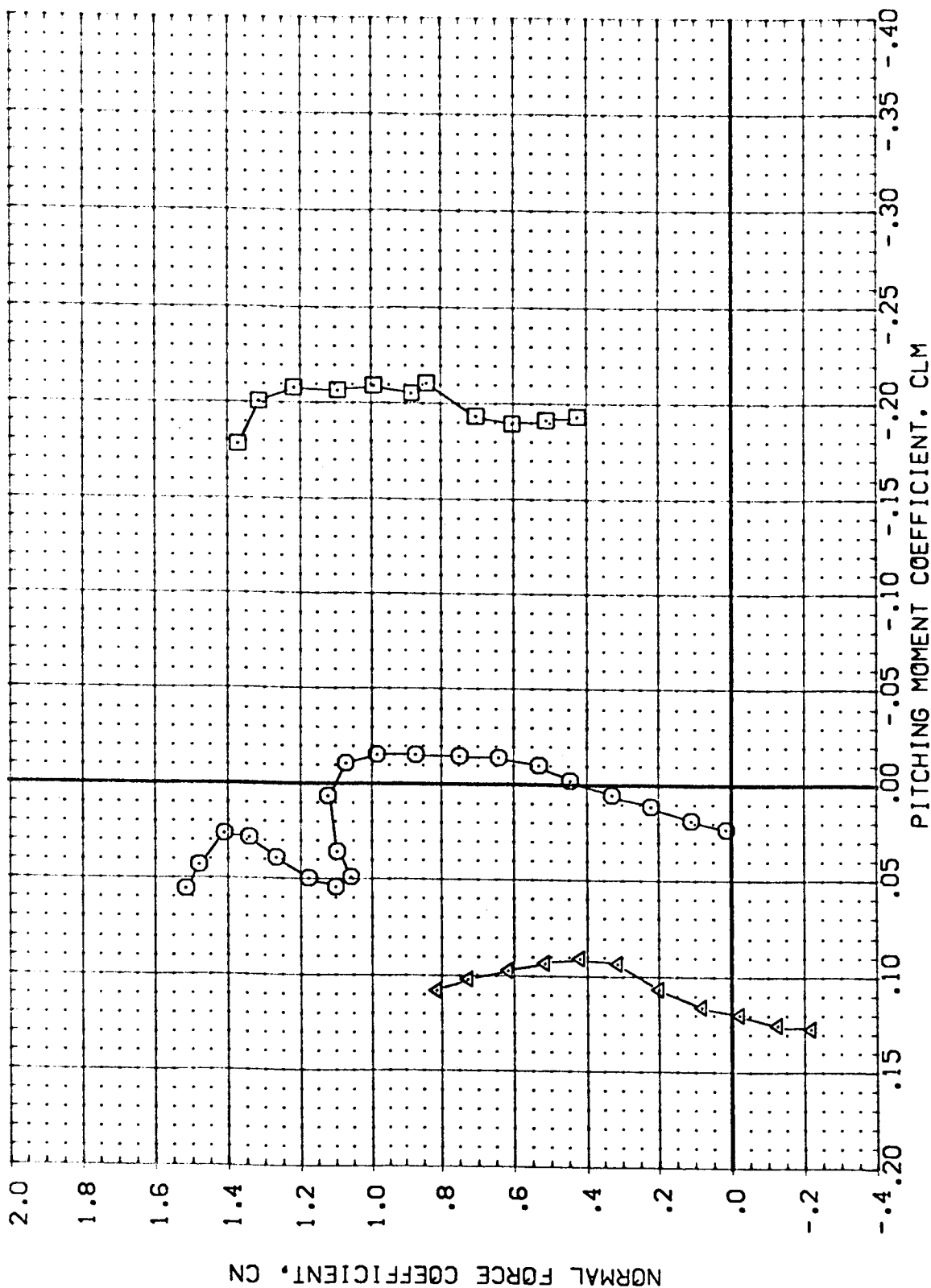


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

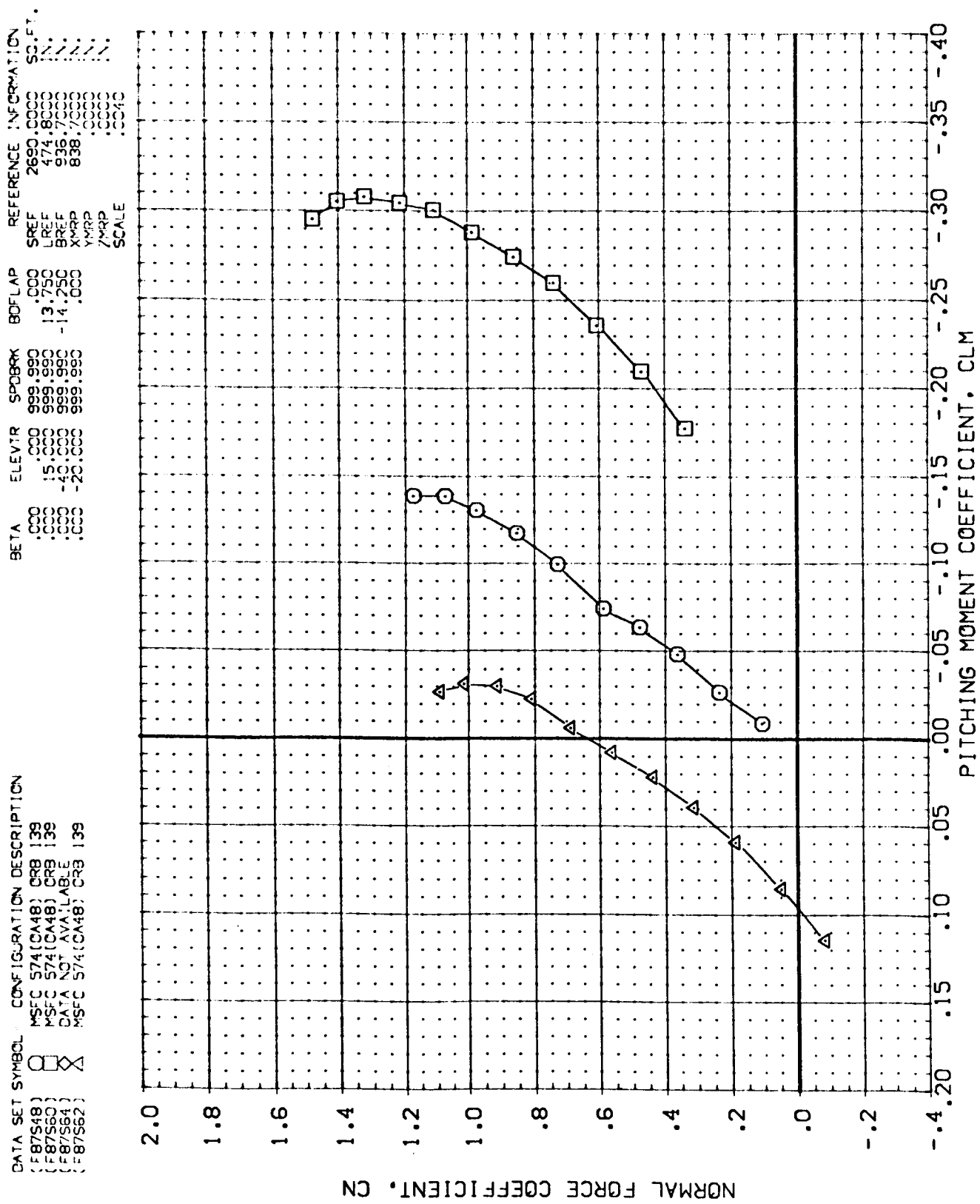
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) ORB 139
 (F87S63) MSFC 574(CA48) ORB 139
 (F87S64) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) ORB 139

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -20.000 999.990 .000 XMRP 838.7000 IN.
 .000 .000 .000 .000 YMRP .0000 IN.
 .000 .000 .000 .000 ZMRP .0000 IN.
 .000 .000 .000 .000 SCALE



FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOXLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87560)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87564)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	14.250	BREF 936.7000
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XVAP 838.7000
						YVAP .0000
						ZVAP .0000
						SCALE .0040

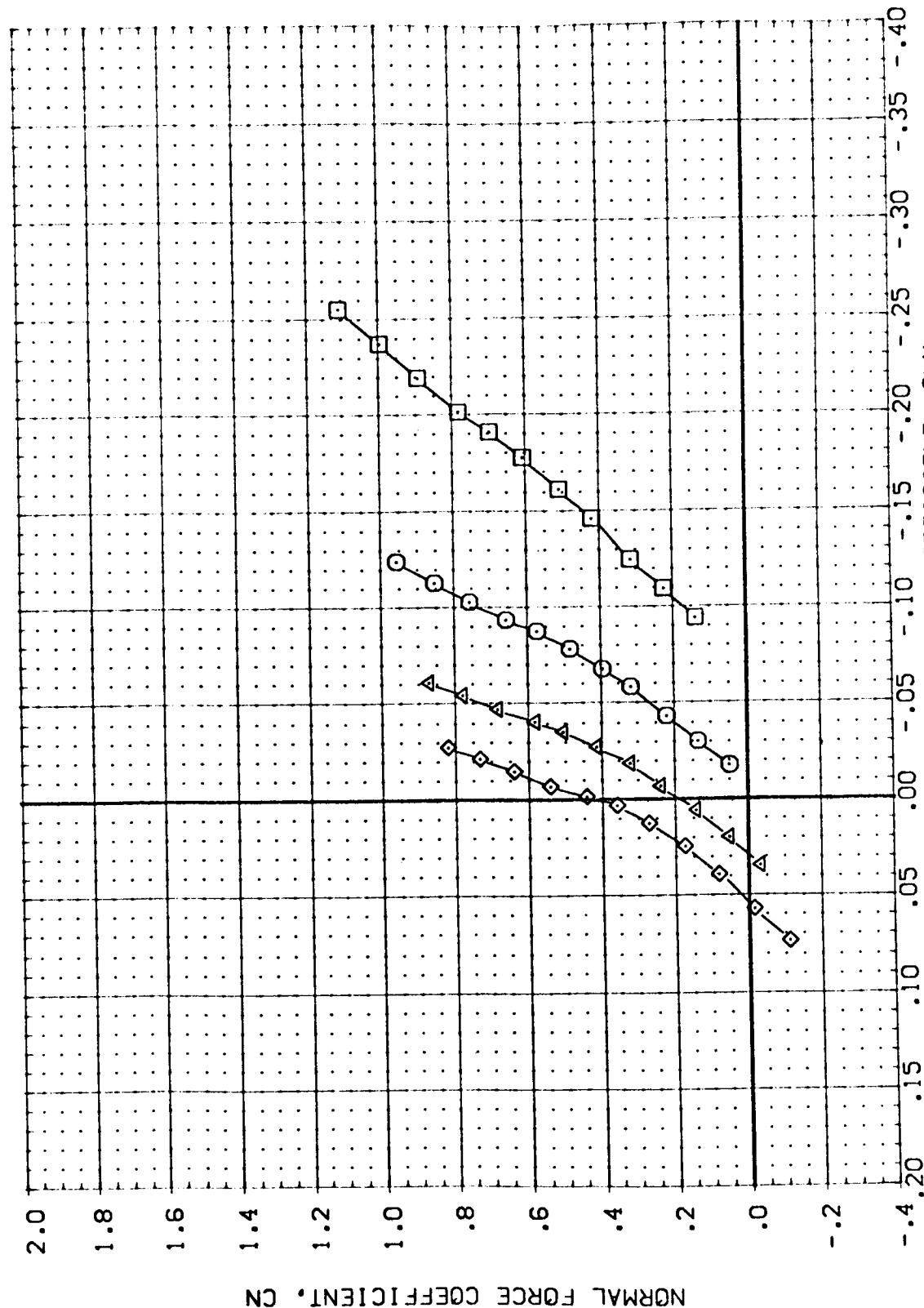


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C) VACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87550)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87552)	MSFC 574(CA48) CRB 139	.000	-43.000	999.990	-14.250	BREF 936.7000
(F87554)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XVAP 838.7000
(F87556)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	ZVAP 1000.0000
(F87558)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	ZURP 1000.0000
(F87560)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SCALE 100.0000

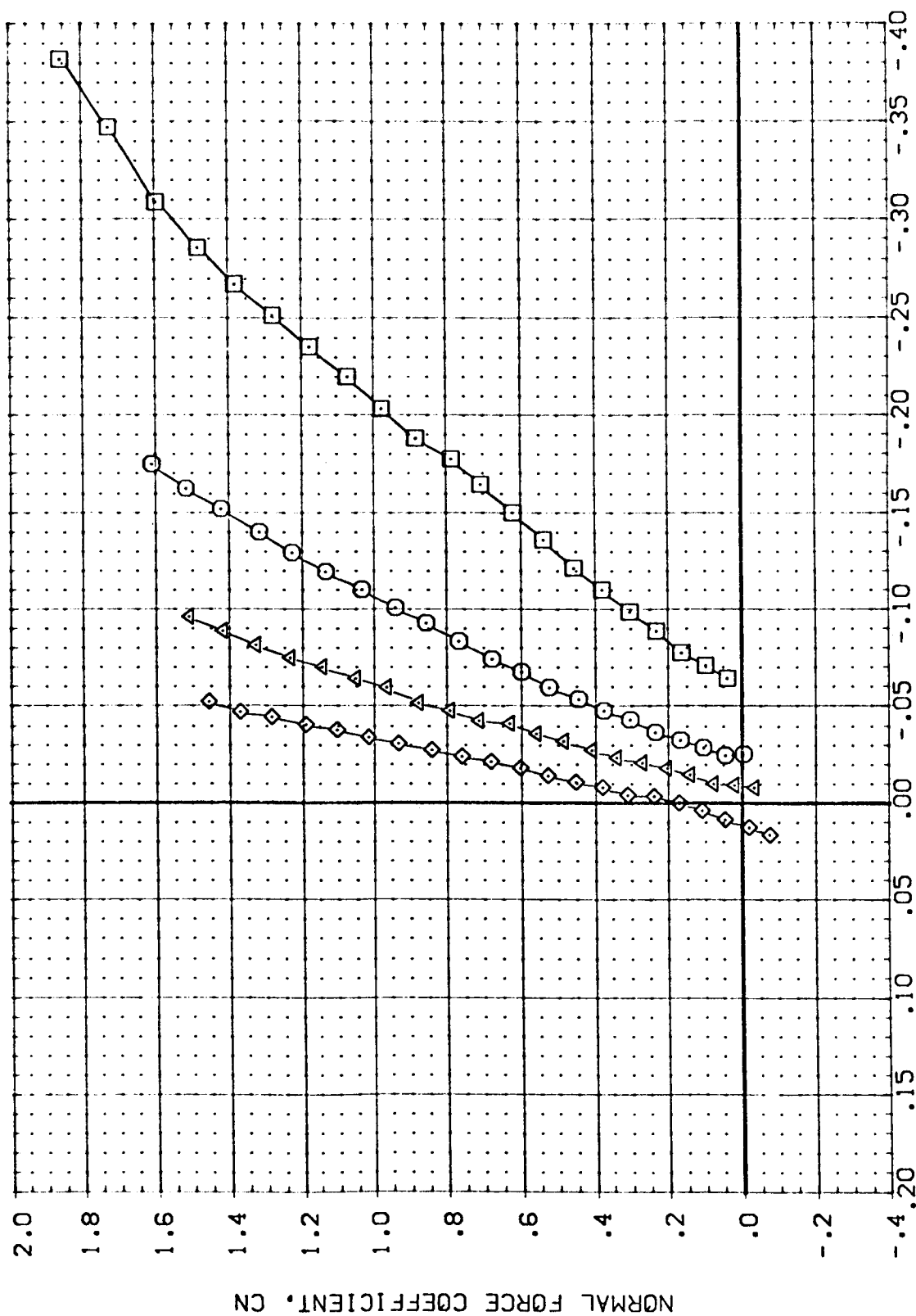


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 2.99

DATA SET SYMBOL - CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(F87548)	MSFC 574(CA48) CR3 139	SREF	2690.0000
(F87560)	MSFC 574(CA48) CR3 139	LSREF	474.8000
(F87564)	MSFC 574(CA48) CR3 139	BSREF	936.7000
(F87562)	MSFC 574(CA48) CR3 139	XREF	838.7000
		YREF	0000.0000
		ZREF	0000.0000
		SCALE	0040

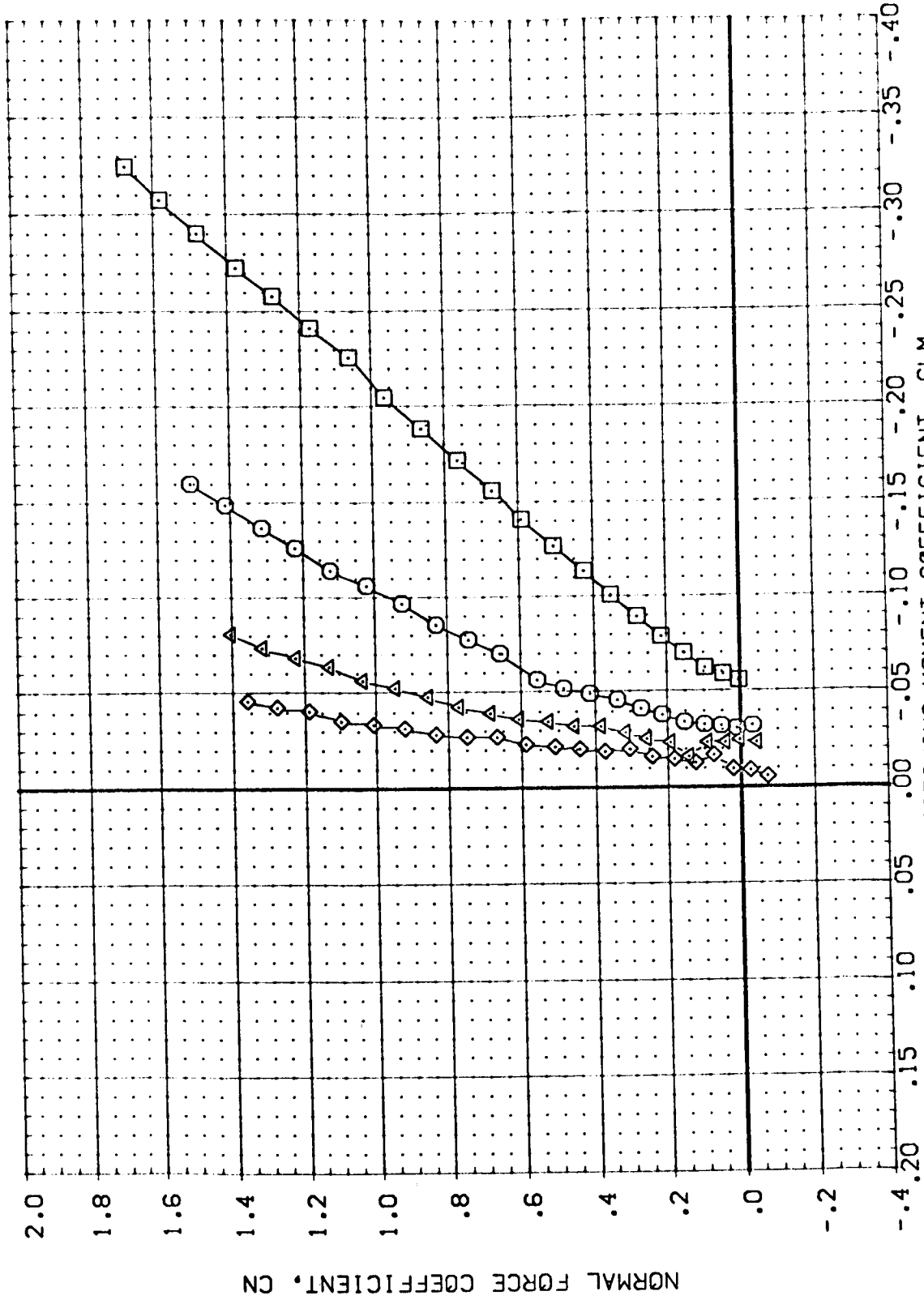


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87562) MSEC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSEC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

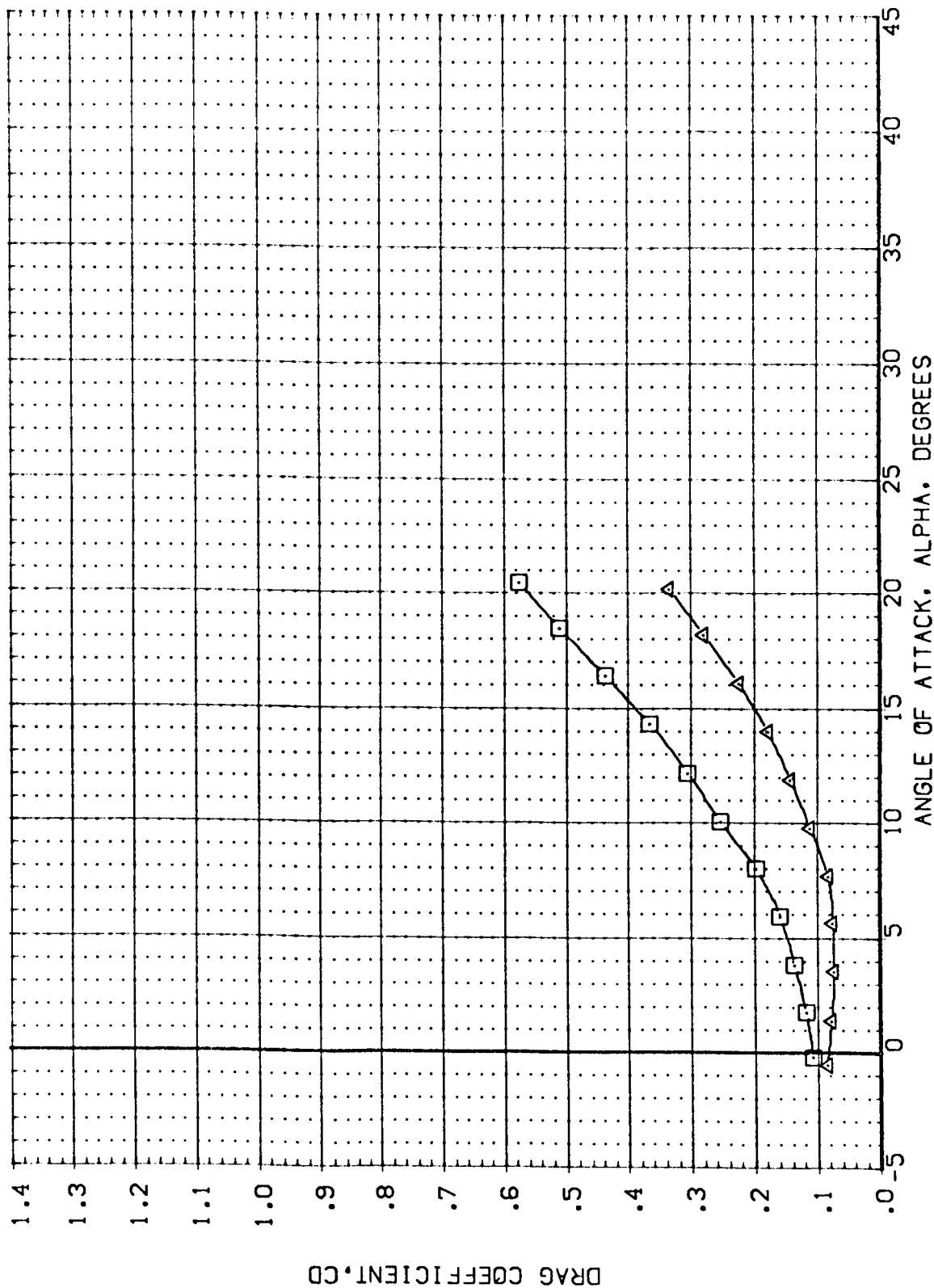


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87564)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XREF 838.7000
					.000	ZVRP .0000
					.0040	SCALE .0040

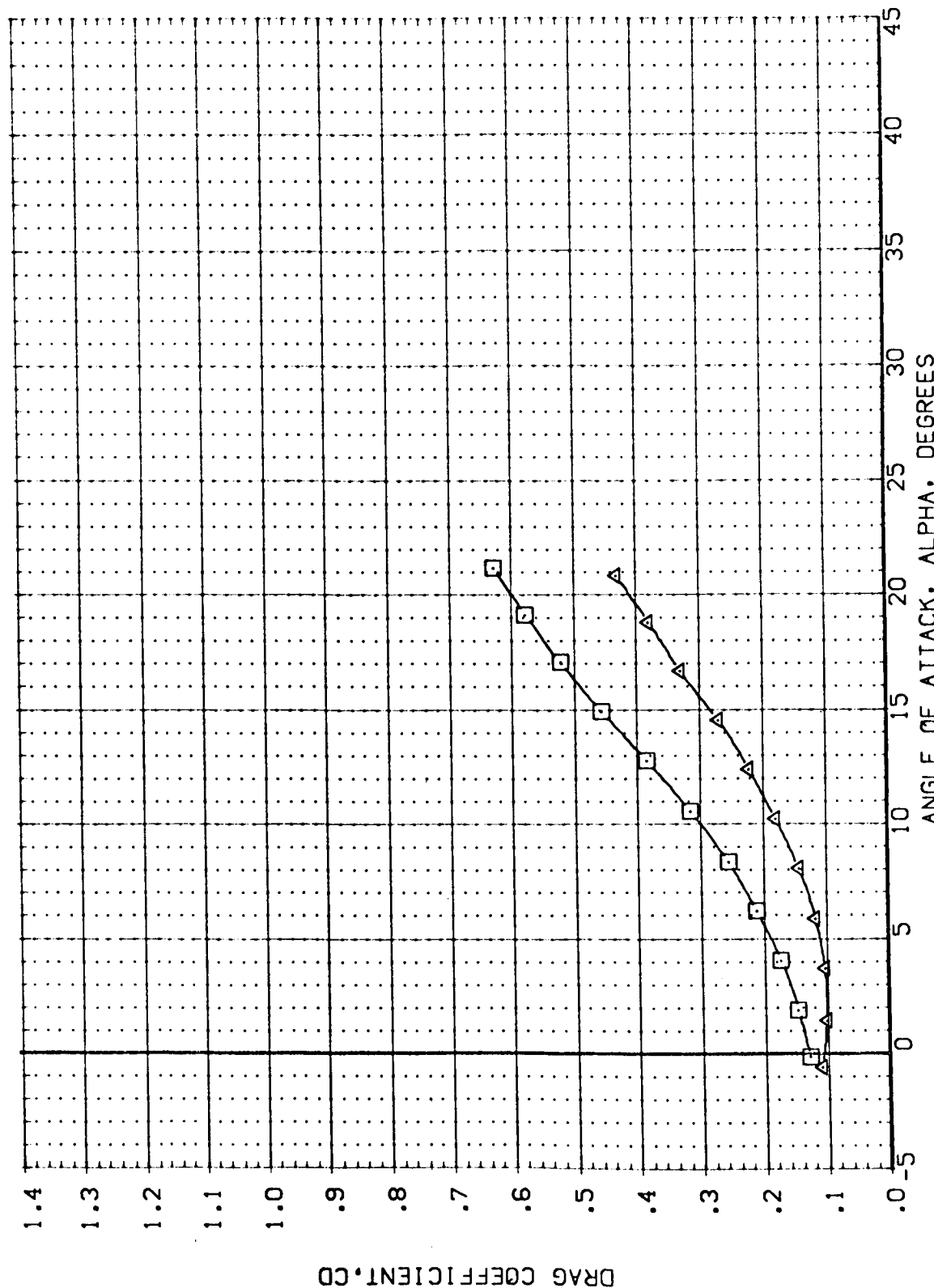


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 Q DATA NOT AVAILABLE
 XSEC 574(CA48) CRB 139
 X DATA NOT AVAILABLE
 XSEC 574(CA48) CRB 139

BETA ELEVTR SPDRBK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SCALE
 .000 15.000 999.990 -13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 836.7000
 .000 -20.000 999.990 .000 XVRP 838.7000
 .000 .000 .000 ZVRP .0000
 .000 .000 .000 SCALE .0040

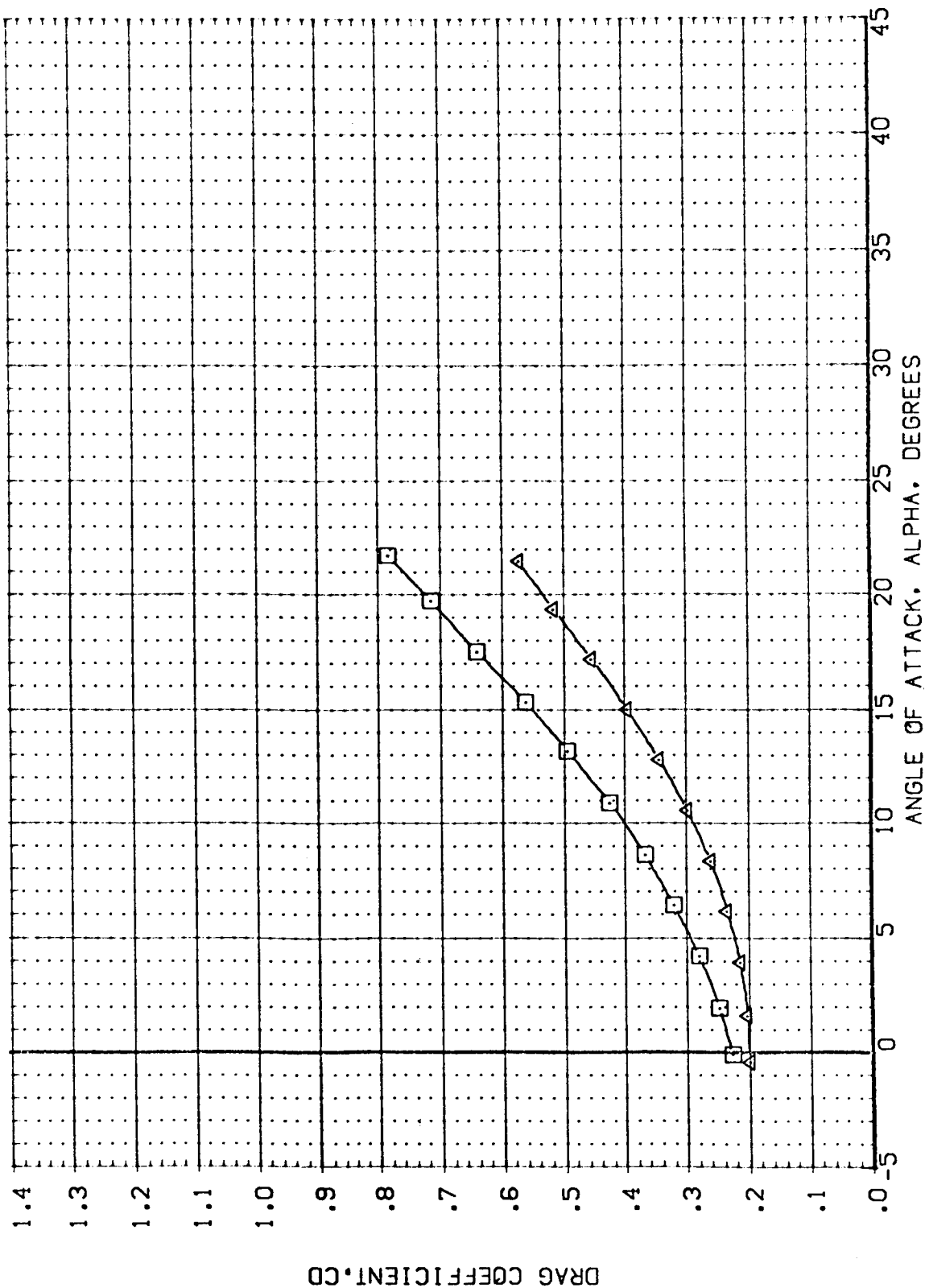


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CDMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) MSFC 574(CA48) CR3 139
 (F87560) MSFC 574(CA48) CR3 139
 (F87564) MSFC 574(CA48) CR3 139
 (F87562) MSFC 574(CA48) CR3 139

BETA ELEVTR SDOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 30.000
 .000 .000 999.990 .000 LREF 474.8000 1.000
 .000 .000 999.990 .000 BREF 936.7000 1.000
 .000 .000 999.990 .000 XREF 838.7000 1.000
 .000 .000 999.990 .000 YREF 7000.0000 1.000
 .000 .000 999.990 .000 ZREF 7000.0000 1.000
 .000 .000 999.990 .000 SCALE

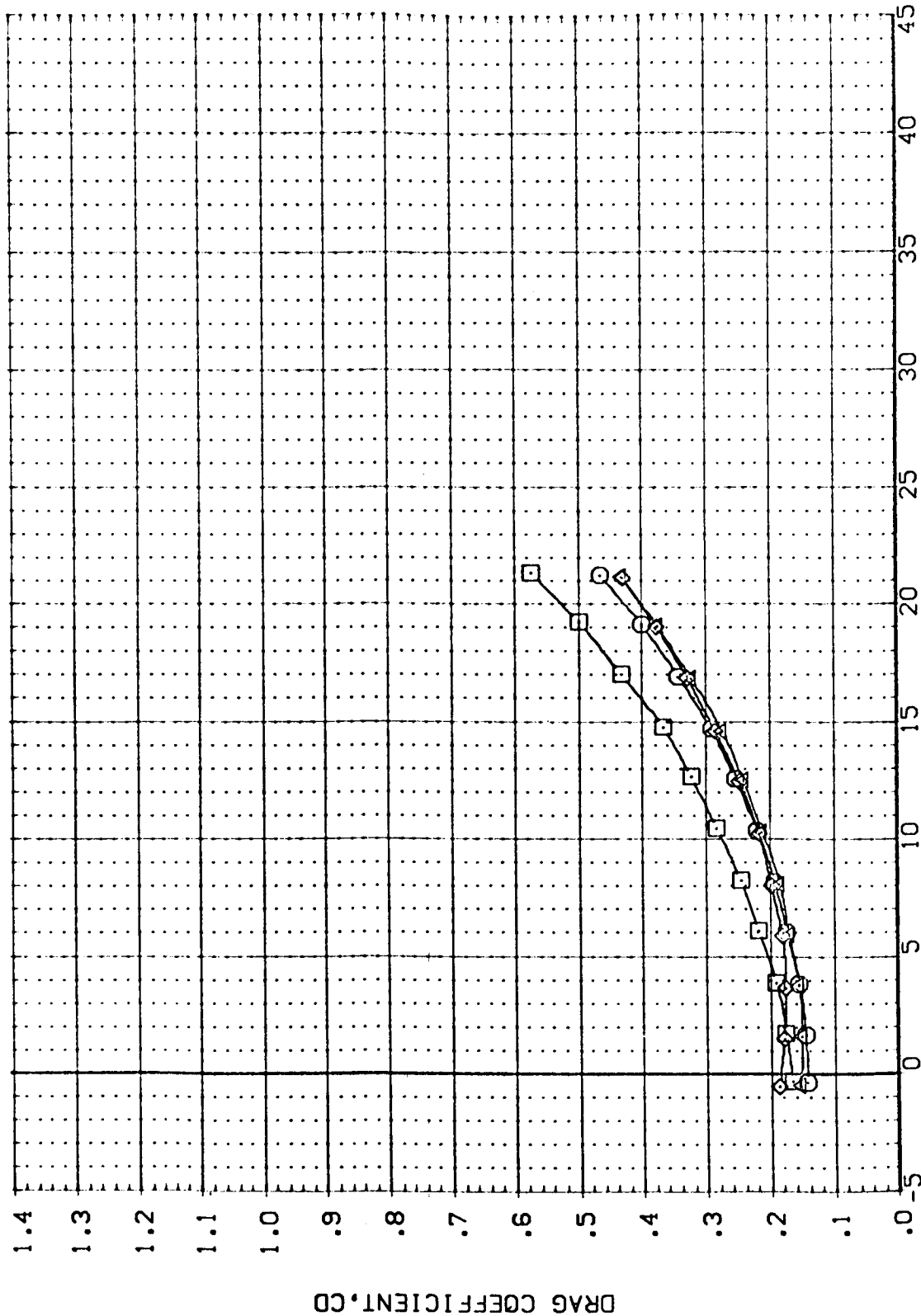


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) MSEC 574(CA48) CR3 139
 (F87S60) MSEC 574(CA48) CR3 139
 (F87S64) MSEC 574(CA48) CR3 139
 (F87S62) MSEC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000
 .000 .000 999.990 13.750 LREF 474.8000
 .000 .000 999.990 -14.250 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0040

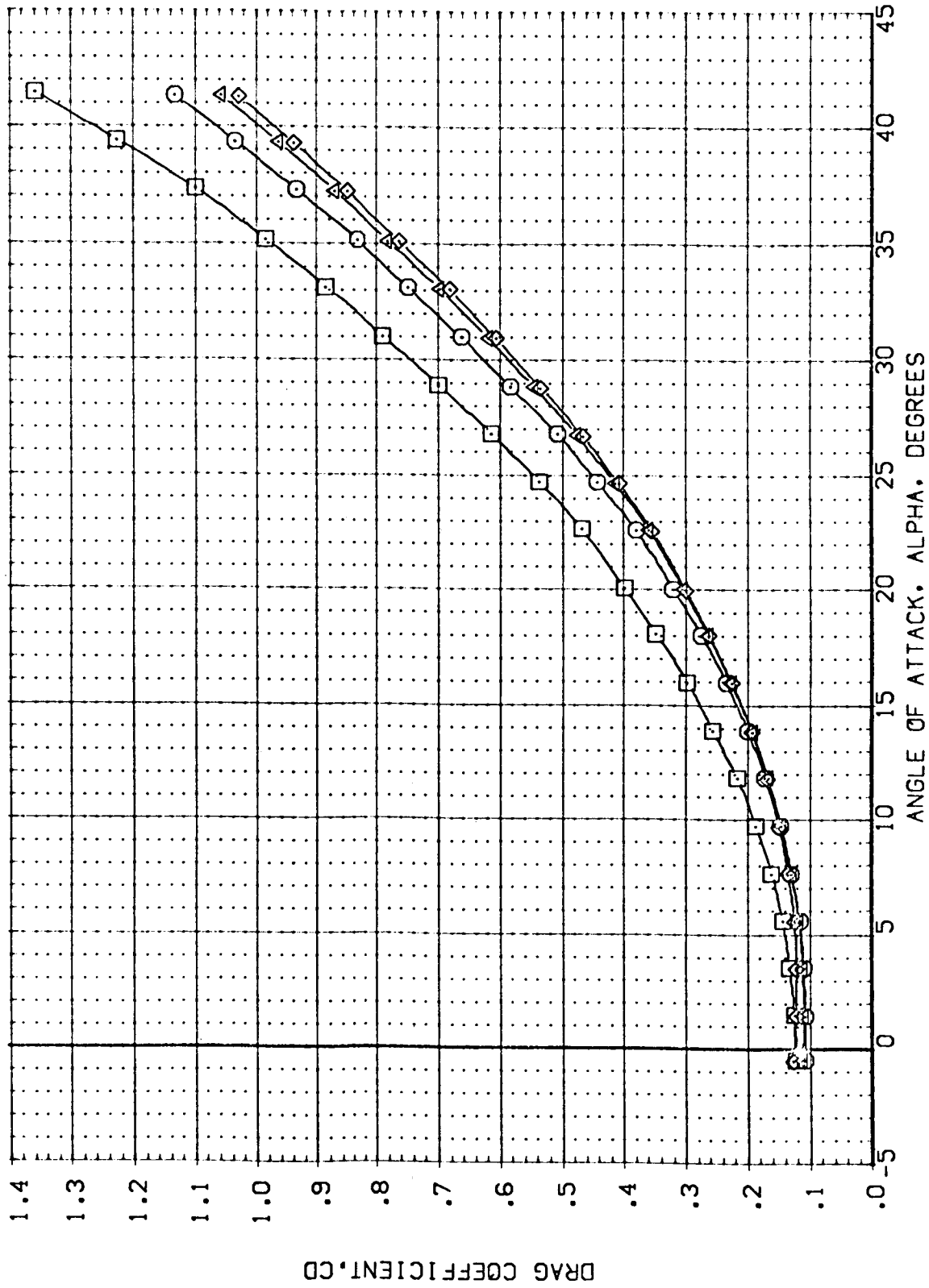


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(CD)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 X87548 WSFC 574(CA48) CRB 139
 F87550 WSFC 574(CA48) CRB 139
 F87552 WSFC 574(CA48) CRB 139
 F87554 WSFC 574(CA48) CRB 139

BETA ELEVTR SPOGRK BOFLAP
 .000 .000 999.999 .000
 .000 15.000 999.999 13.750
 .000 -40.000 999.999 -14.250
 .000 -20.000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BREF 936.7000
 XREF 838.7000
 YREF .0000
 ZREF .0000
 SCALE .0000

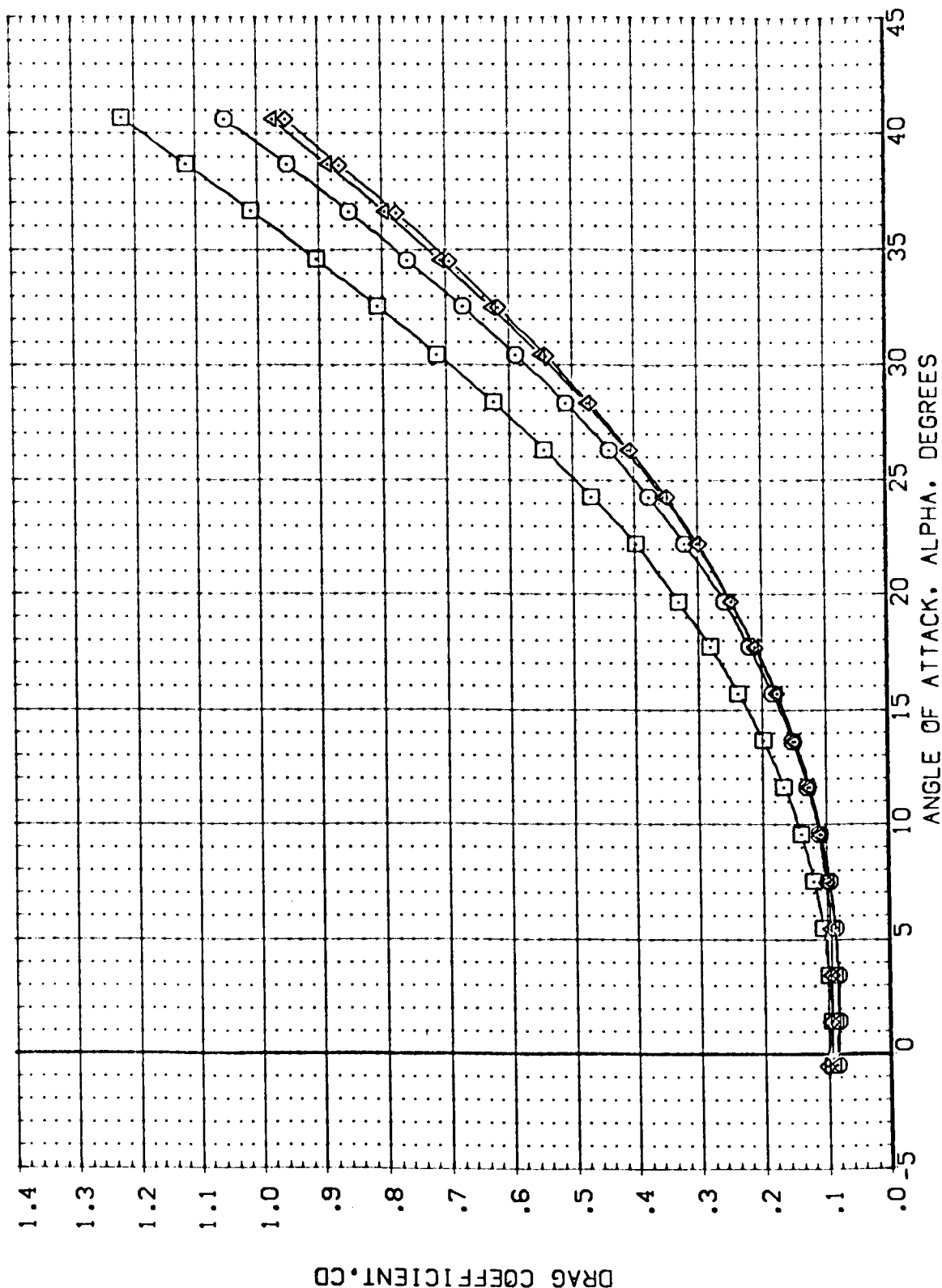


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CRB 139
 (F87S64) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPORRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BREF 936.7000
 XVRP 838.7000
 YVRP .0000
 ZVRP .0000
 SCALE .0010

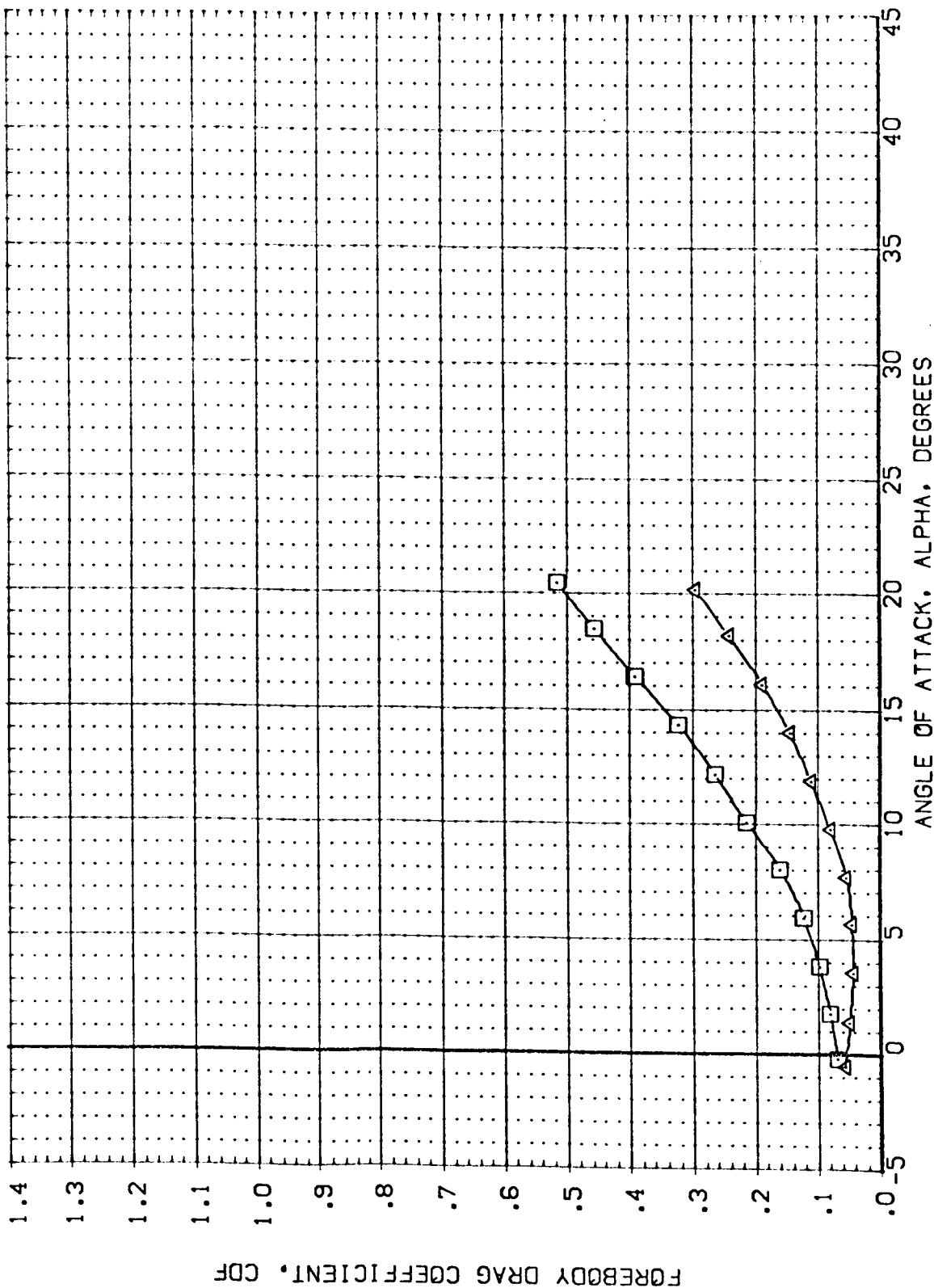


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CADYACH = .60

DATA SET SYMB: CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CRB 139
 (F87562) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPODRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2692.0000 50.000
 LREF 4774.8000 7.000
 BREF 938.7000 1.000
 XREF 838.7000 1.000
 YREF .0000 1.000
 ZREF .0000 1.000
 SCALE .0010

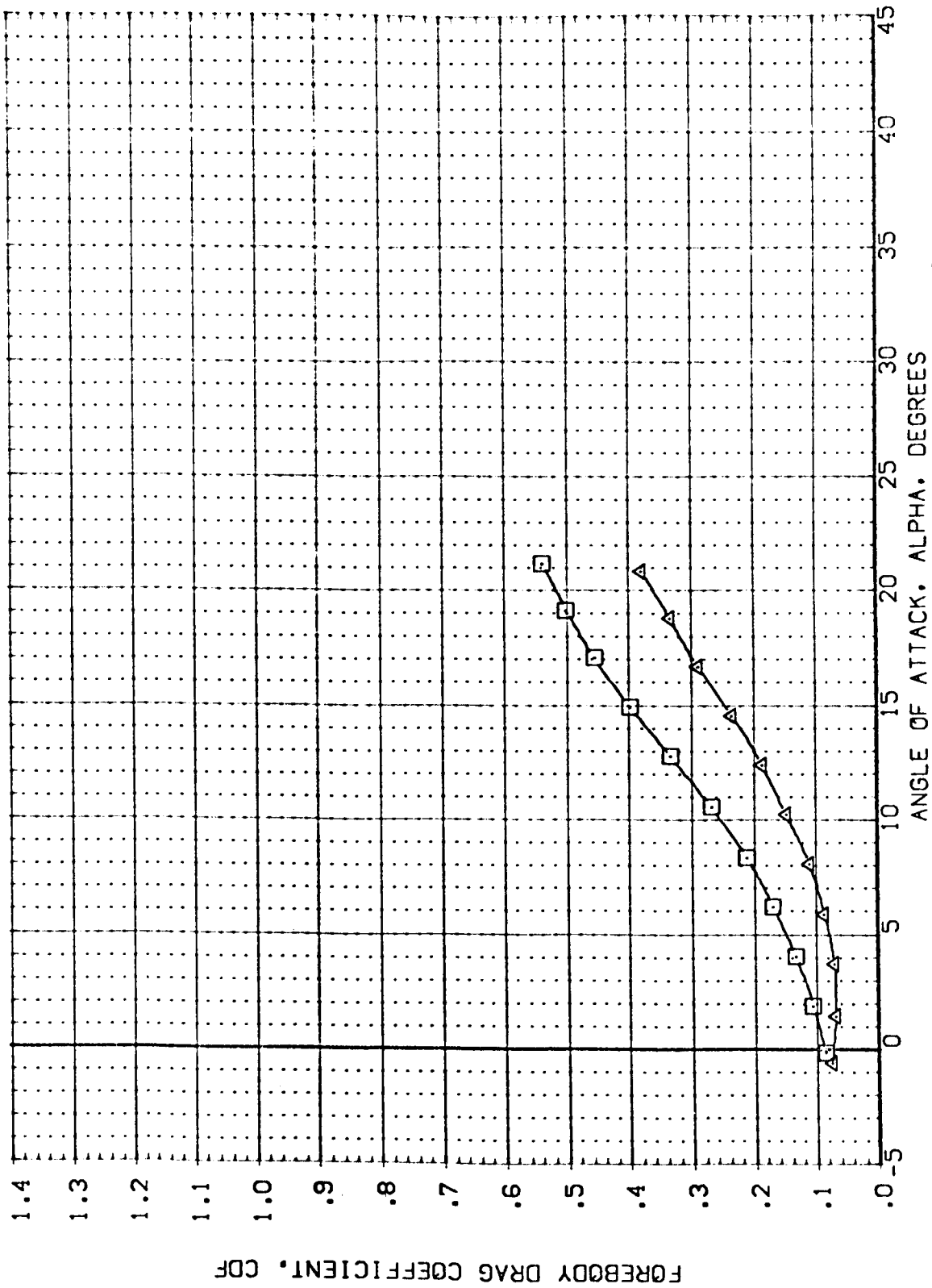


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

BOYACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X8/S48) DATA NOT AVAILABLE
 (F8/S60) MSFC 574(CA48) CRB 139
 (F8/S60) DATA NOT AVAILABLE
 (F8/S60) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -10.000 999.990 -14.250
 .000 -20.000 999.990 1.000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XREF 838.7000
 YREF 1000.0000
 ZREF 1000.0000
 SCALE 10000

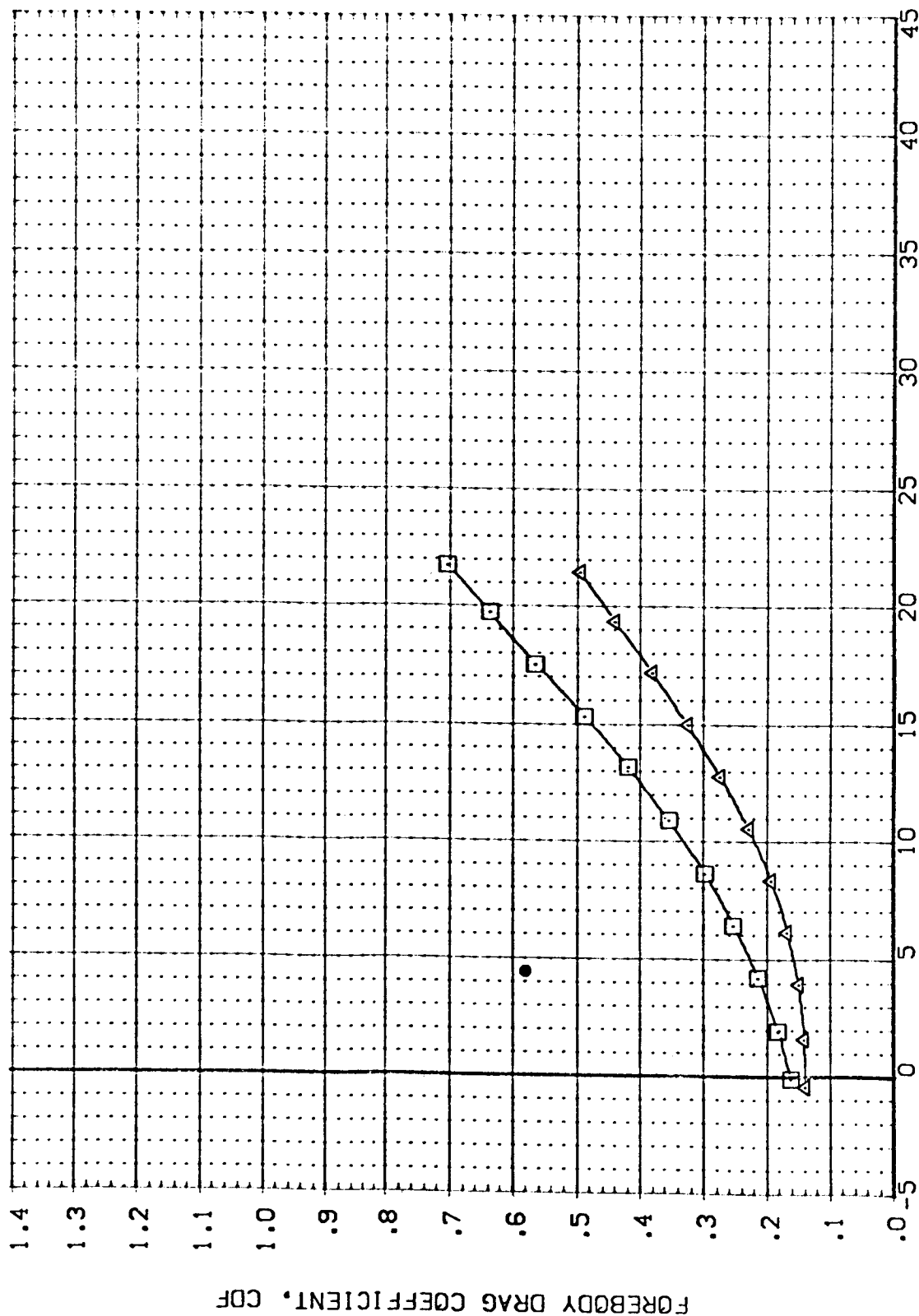


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CCVACH = :.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2890.0000
(F87562)	MSFC 574(CA48) CRB 139	.000	.000	999.990	13.750	LB-F 474.8000
(F87561)	MSFC 574(CA48) CRB 139	.000	.000	999.990	-14.250	BREF 936.7000
(F87562)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	.000	XMRP 838.7000
			-20.000	999.990	.000	YMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0010

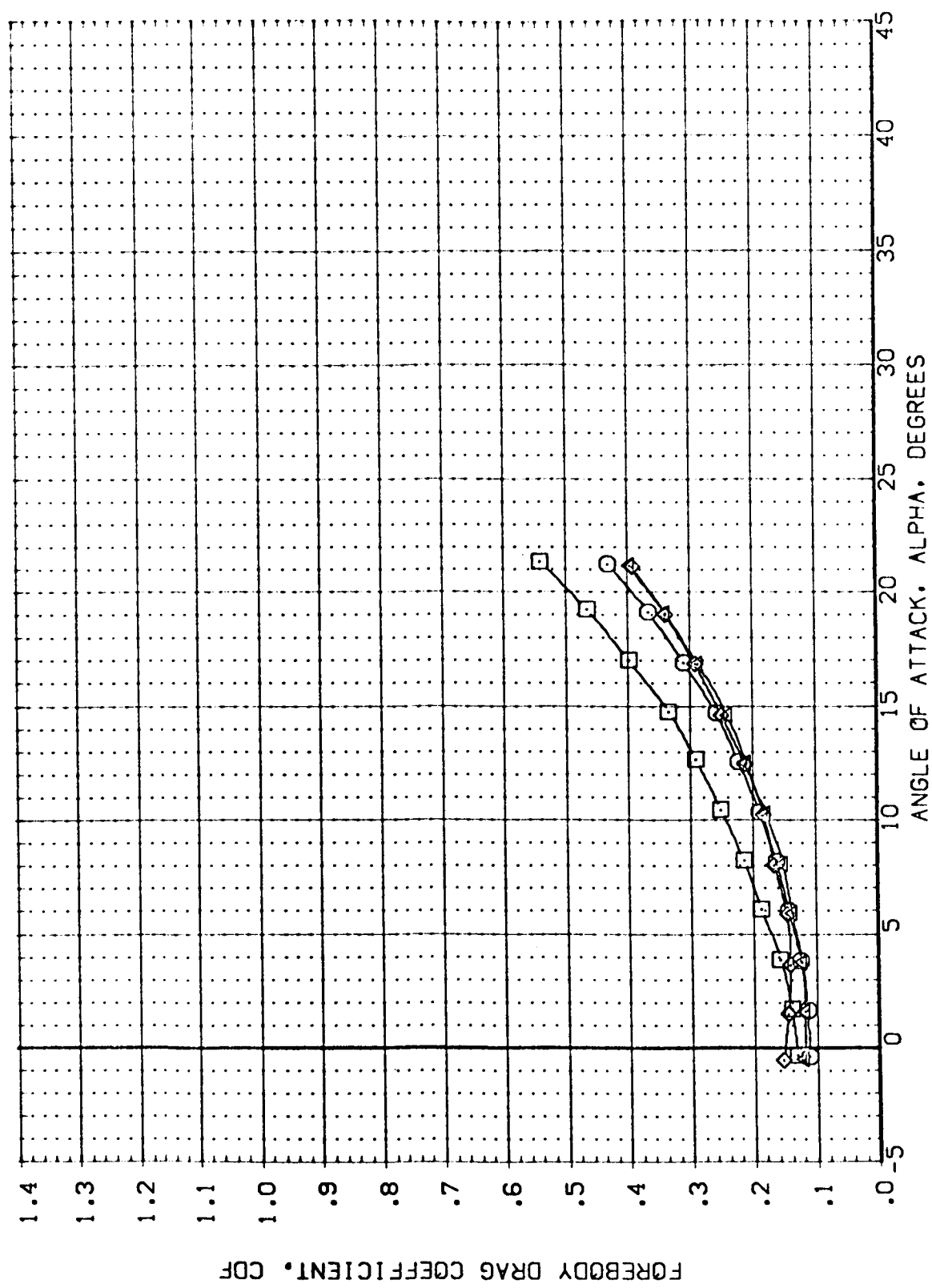


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) WSC 574(CA48) CR3 39
 (F87S62) WSC 574(CA48) CR3 39
 (F87S54) WSC 574(CA48) CR3 39
 (F87S62) WSC 574(CA48) CR3 39

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 .000 999.990 13.750
 .000 .000 999.990 -14.250
 .000 .000 999.990 .000
 .000 .000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

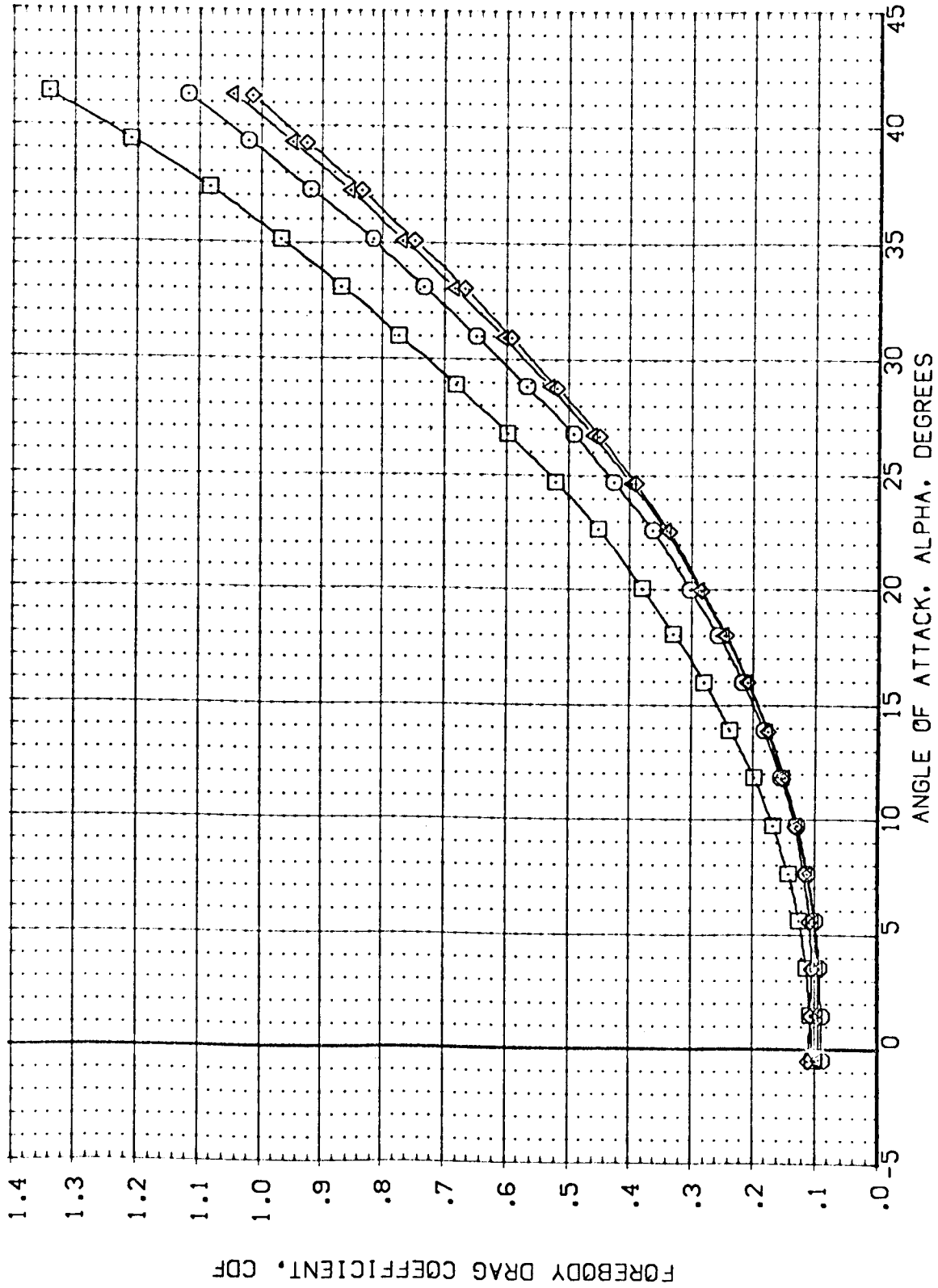


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CEMACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

X87548	WSEC 574(CA48) CRB 139
F87560	WSEC 574(CA48) CRB 139
F87564	WSEC 574(CA48) CRB 139
F87562	WSEC 574(CA48) CRB 139

BETA ELEVTR SPCBRK BCF LAP REFERENCE INFORMATION

.000	.000	999.990	.000	SREF	2690.0000	SC.FT.
.000	.000	999.990	13.750	REF	474.8000	
.000	.000	999.990	-14.250	BREF	936.7000	
.000	.000	999.990	.000	XREF	838.0000	
.000	.000	999.990	.000	YREF	0.0000	
.000	.000	999.990	.000	ZREF	0.0000	
.000	.000	999.990	.000	SCALE	0.040	

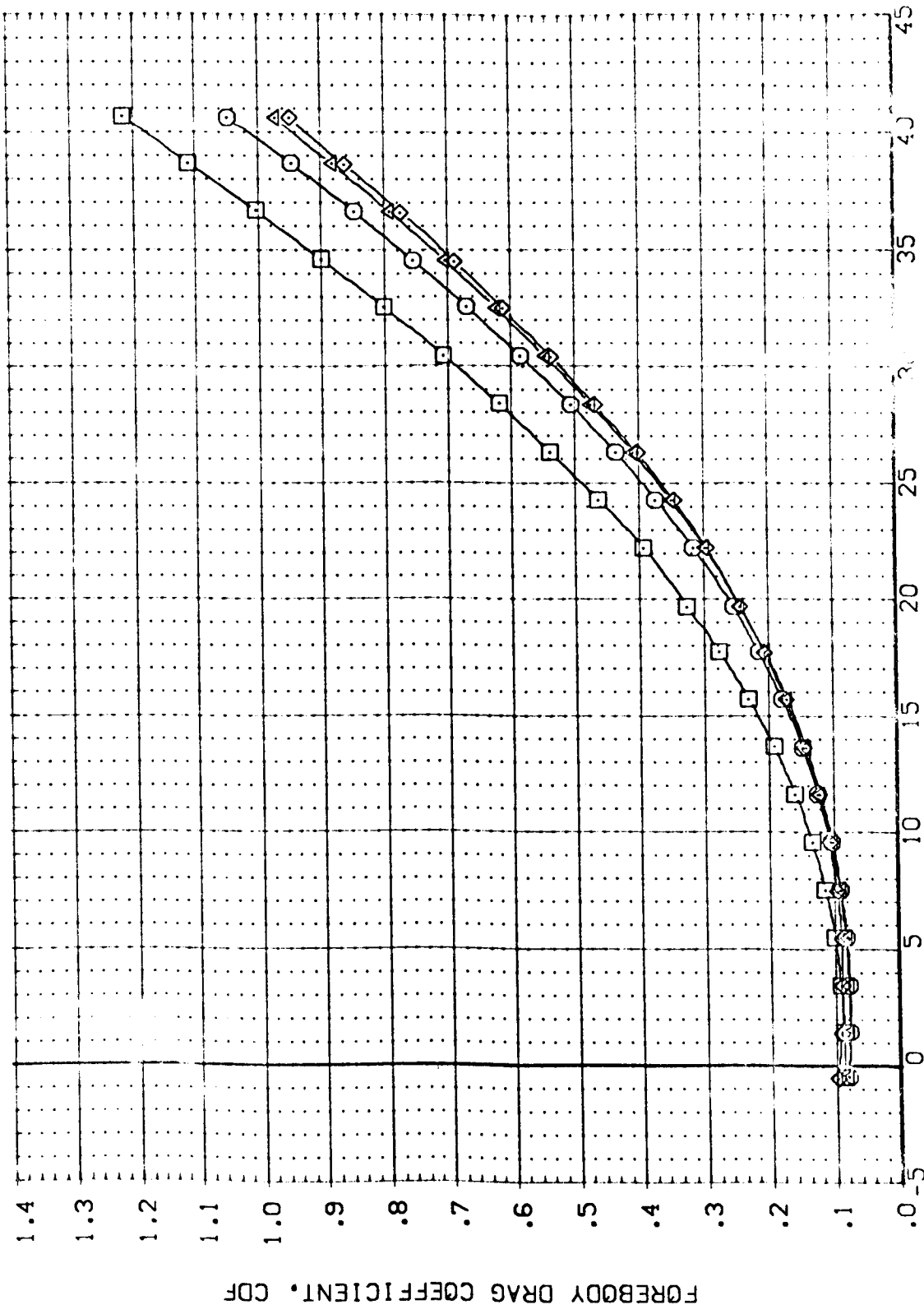


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CDMACH = 4.96

DATA SET SYMBOL: \square \triangle
 CONFIGURATION DESCRIPTION:
 DATA NOT AVAILABLE
 MSFC 574(CA48) CRB 139
 DATA NOT AVAILABLE
 MSFC 574(CA48) CRB 139

BETA: .000
 ELEVTR: .000
 SPOGRK: 999.990
 BDF LAP: .000
 SREF: 2690.0000
 LREF: 474.8000
 BREF: 936.7000
 XMRP: 838.7000
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

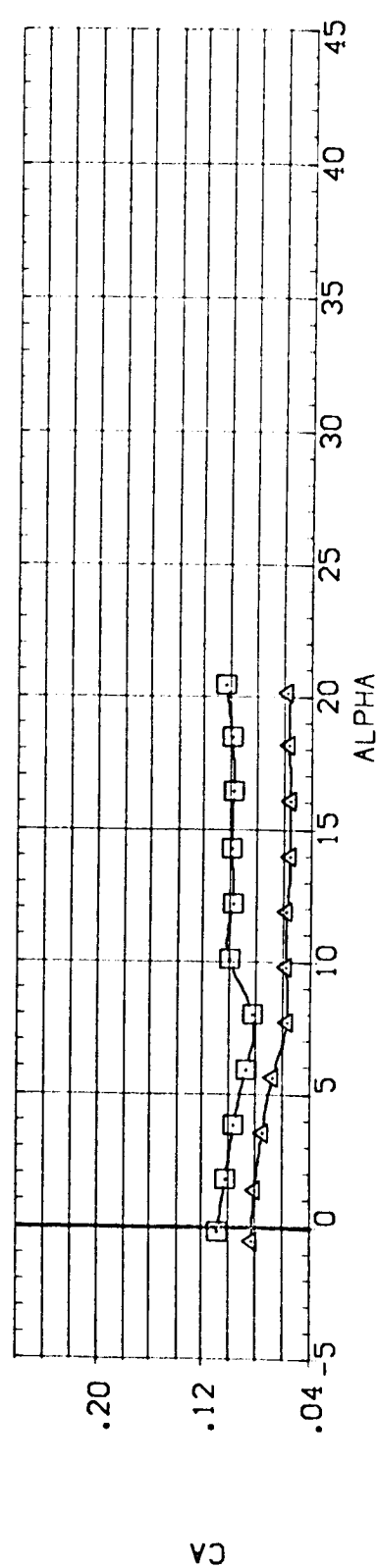
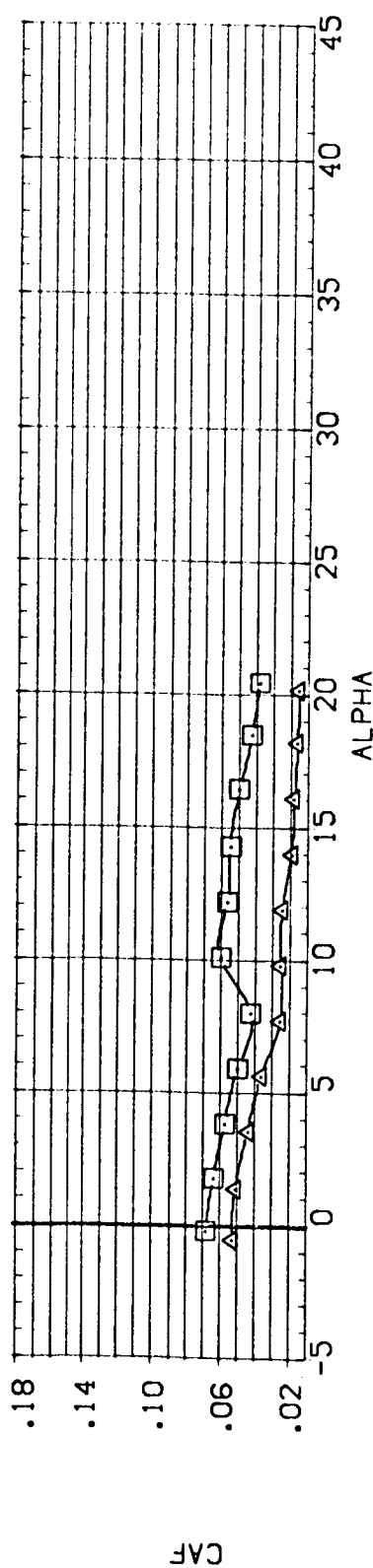
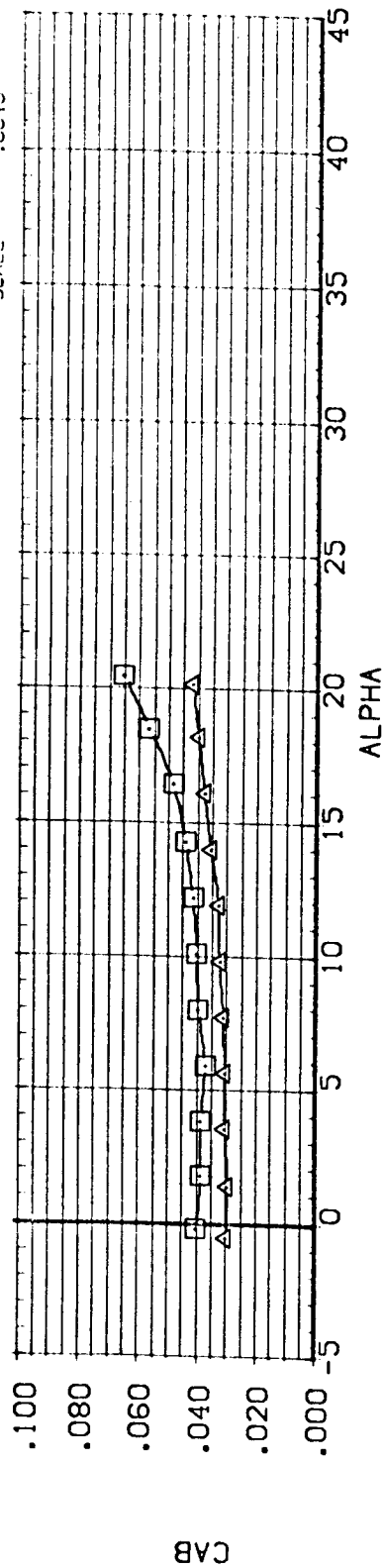


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CAMMACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION	SCALE
(X87S48)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SRF	2690.0000
(F87S60)	VSFC 574(CA48) CRB 139	.000	.000	999.990	13.750	LRFF	474.8000
(F87S61)	DATA NOT AVAILABLE	.000	.000	999.990	-14.250	BRFF	936.0000
(F87S62)	VSFC 574(CA48) CRB 139	.000	-40.000	999.990	.000	XVRP	838.0000
		.000	-20.000	999.990	.000	ZVRP	0.0000
		.000				SCALE	0.0000

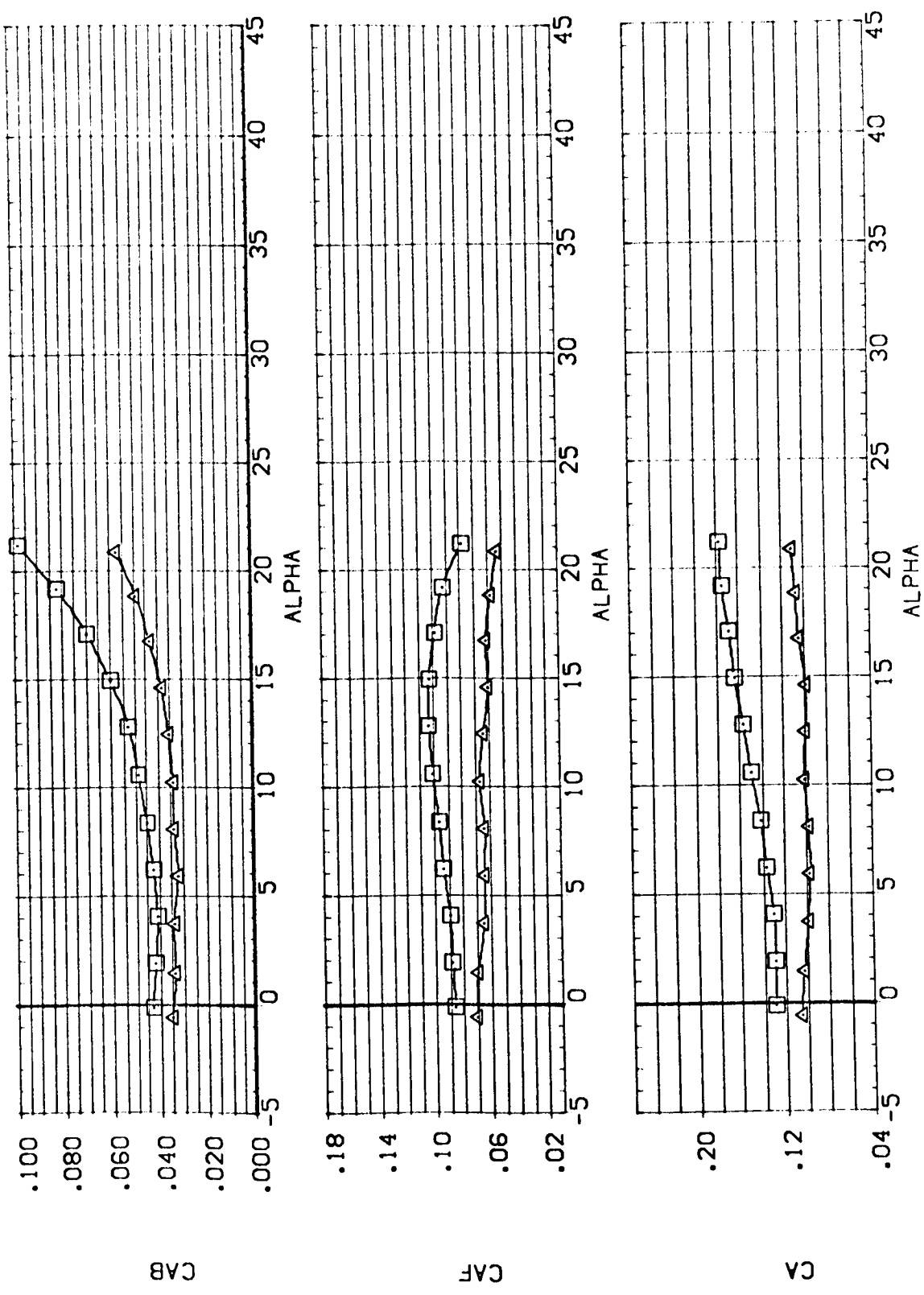


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
(B) MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	
(X87S48)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF	2690.0000
(F87S60)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LRREF	474.8000
(F87S61)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BRREF	936.7000
(F87S62)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XREF	838.7000
						YREF	.0000
						ZREF	.0000
						SCALE	.0040

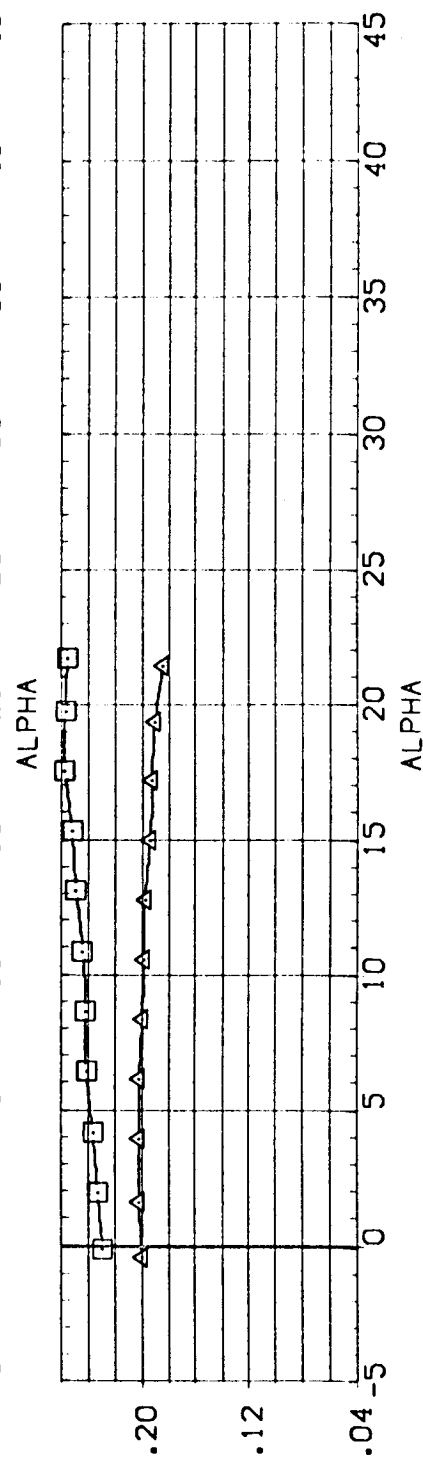
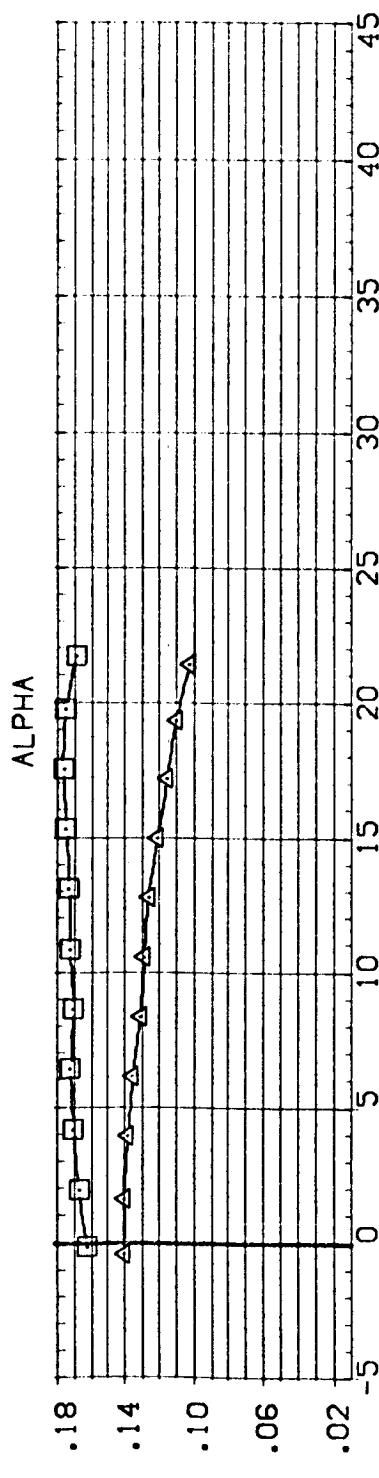
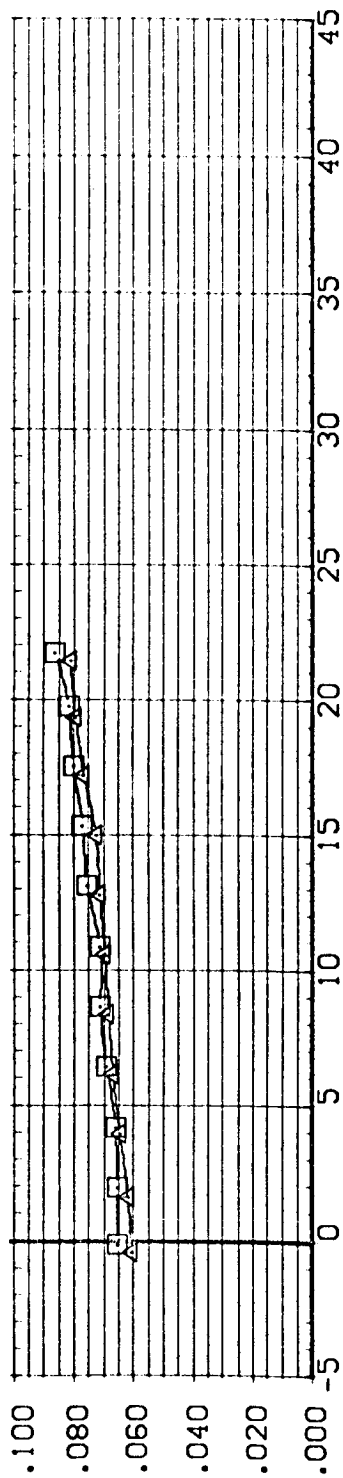


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	MSFC 574 (CA48) CRB 39	.000	.000	999.990	.000	2690.0000
(F87560)	MSFC 574 (CA48) CRB 39	.000	.000	999.990	13.750	474.8000
(F87564)	MSFC 574 (CA48) CRB 39	.000	-40.000	999.990	-14.250	936.7000
(F87562)	MSFC 574 (CA48) CRB 39	.000	-20.000	999.990	.000	838.7000
					VMPP	.0000
					ZVPP	.0000
					SCALE	.0040

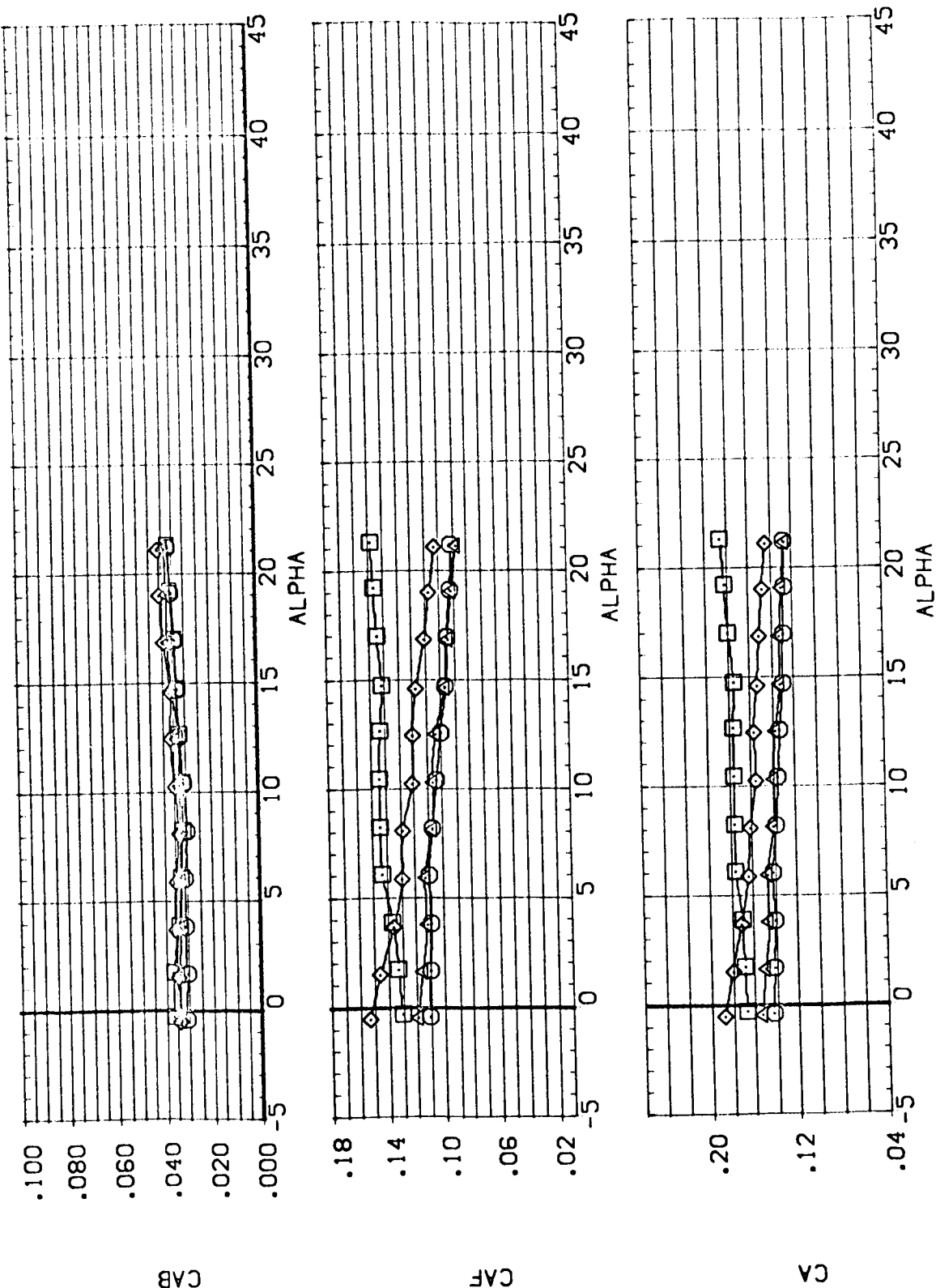
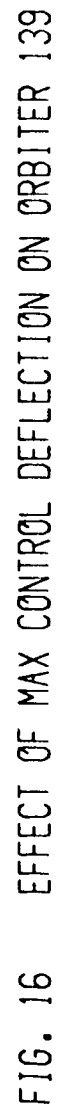


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (C)MACH = 1.95

BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE	INFORMATION
.000	.000	99.990	.000	SREF	269.0000
.000	15.000	99.990	13.750	LEFF	474.8000
.000	-4.000	99.990	-14.000	BEFF	936.7000
.000	-2.000	99.990	.000	YPRP	838.7000
.000	.000	99.990	.000	ZPRP	.0000
.000	.000	99.990	.000	SCALE	.0000



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOCLAP	REFERENCE INFORMATION
(X87548)	MSFC 574(CA48) ORB 39	.000	.000	999.999	.000	SREF 2690.0000
(F87560)	MSFC 574(CA48) CRB 39	.000	15.000	999.999	.000	REF 474.8000
(F87561)	MSFC 574(CA48) CRB 39	.000	-40.000	999.999	.000	SREF 936.7000
(F87562)	MSFC 574(CA48) CRB 39	.000	-20.000	999.999	.000	XREF 838.7000
						SCALE .0040

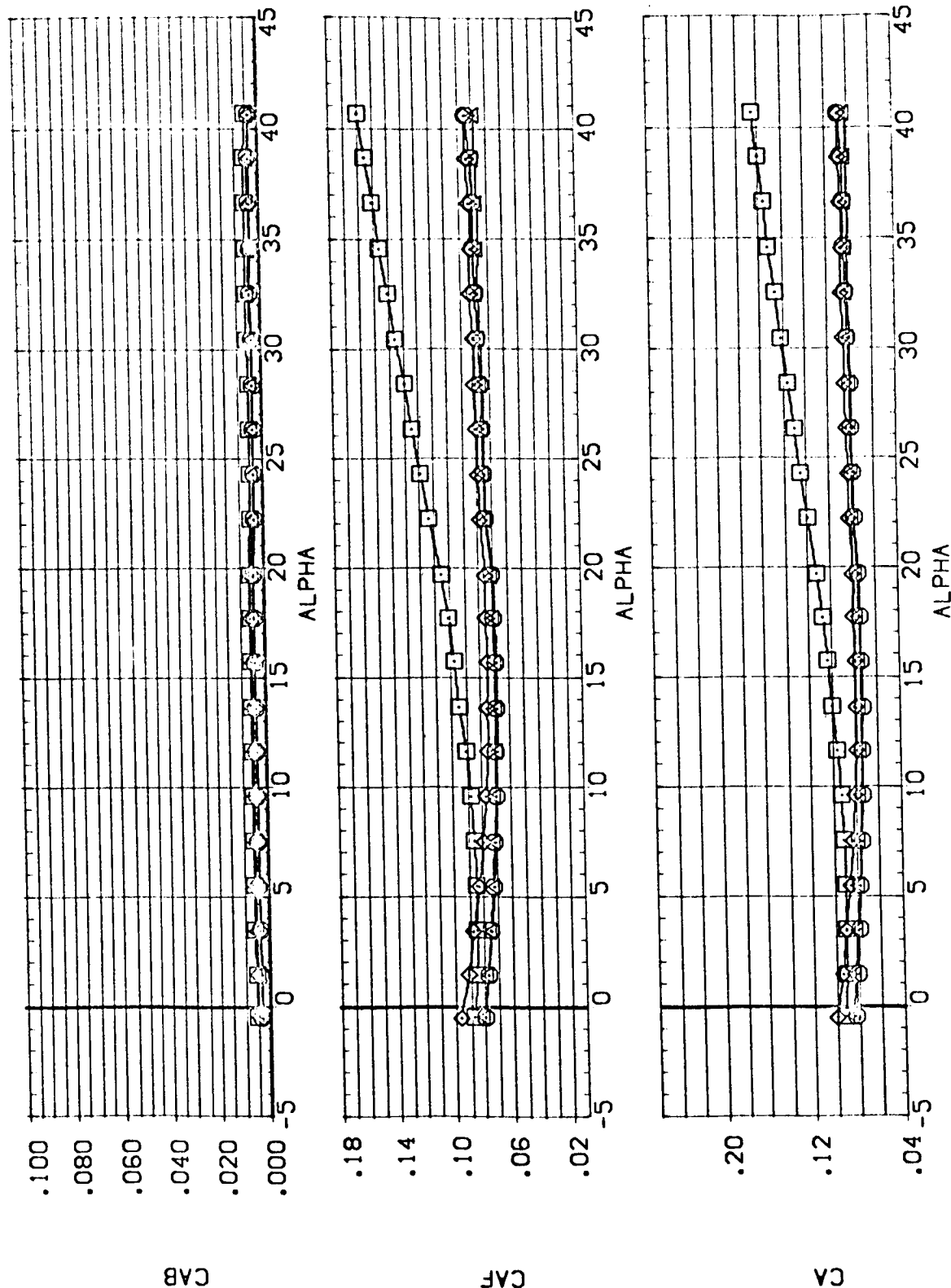


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87550) MSFC 574(CA48) CRB 139
 (F87552) DATA NOT AVAILABLE
 (F87554) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.F.T.
 .000 15.000 999.990 .000 LREF 474.8000
 .000 -40.000 999.990 .000 BREF 836.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

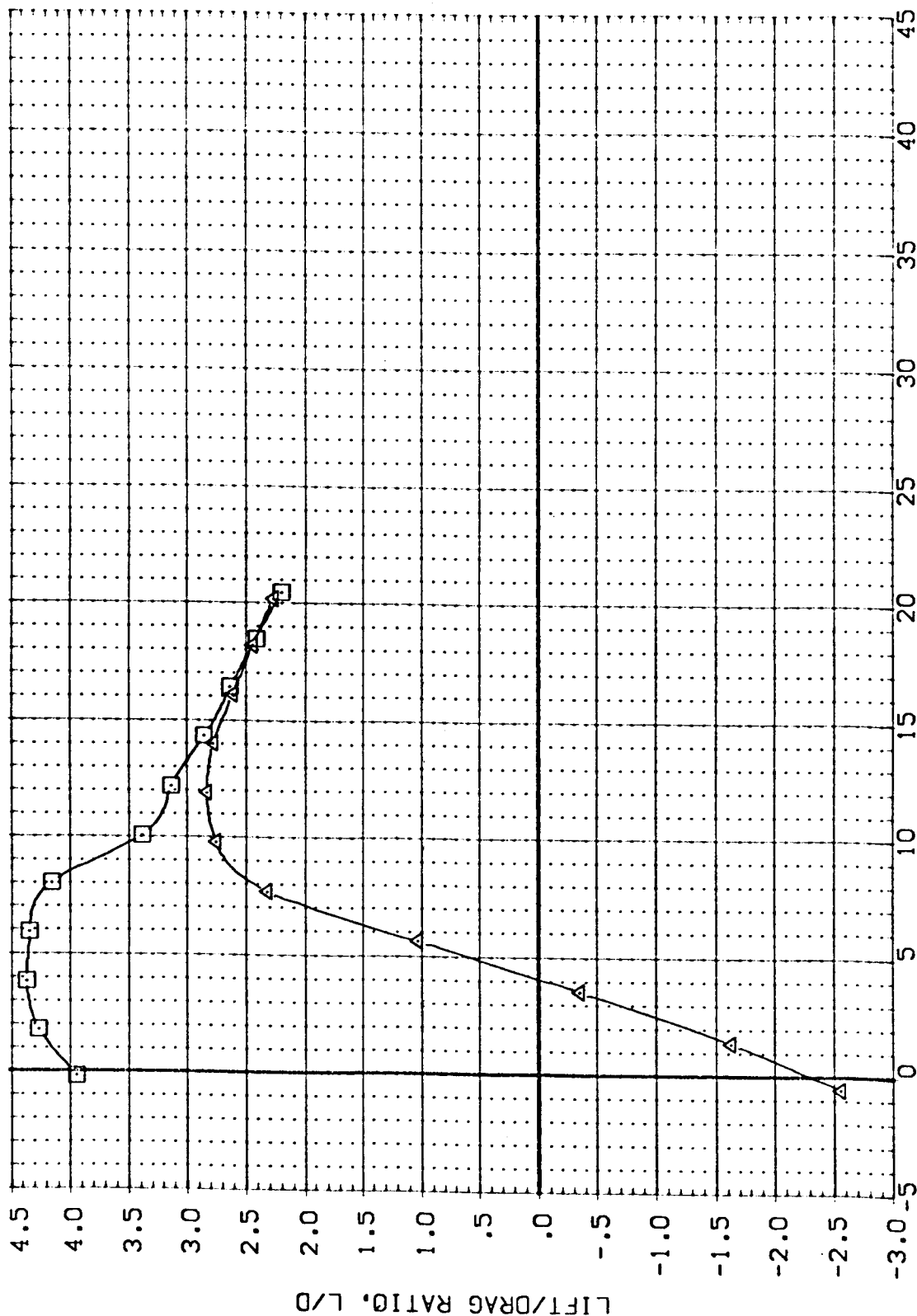


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)YACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOELAP	REFERENCE INFORMATION
(X87548)	DATA NOT AVAILABLE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87550)	MSFC 574(CA48) CRB 139	.000	15.000	999.999	13.750	REF 474.8000
(F87554)	DATA NOT AVAILABLE	.000	-40.000	999.999	-14.250	REF 938.7000
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.999	.000	XREF 838.7000
					.000	WREF .0000
					.000	ZREF .0000
					.000	SCALE .0010

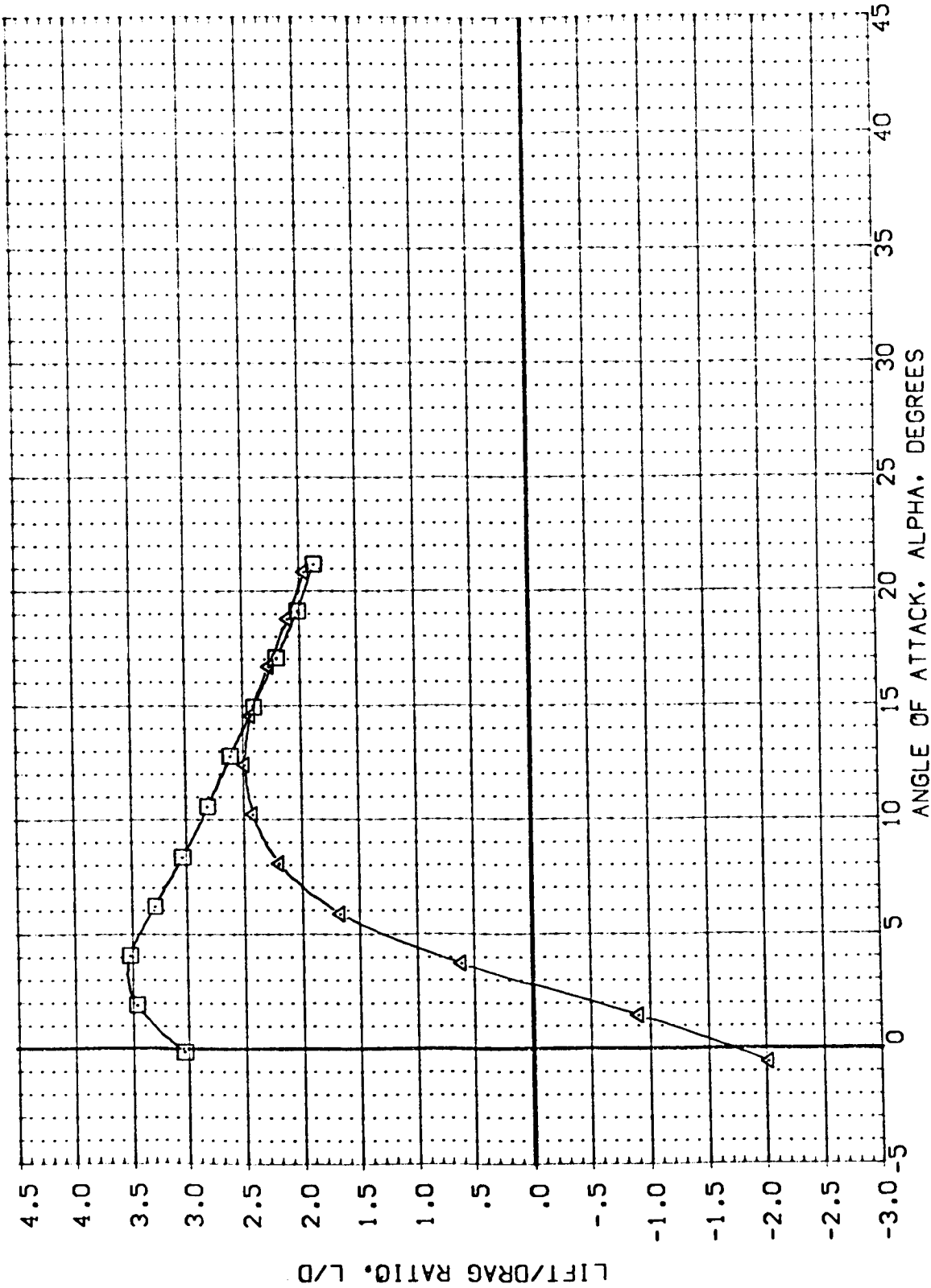


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) VACH = .90

BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SCALE
.000	.000	.999	.000	2692	.000
.000	.000	.999	.000	474	.000
.000	.150	.999	.000	875	.000
.000	.000	.999	.000	835	.000
.000	.000	.999	.000	8	.000
.000	.000	.999	.000	X233	.000
.000	.000	.999	.000	V233	.000
.000	.000	.999	.000	/X233	.000
.000	.000	.999	.000	SCALE	.000

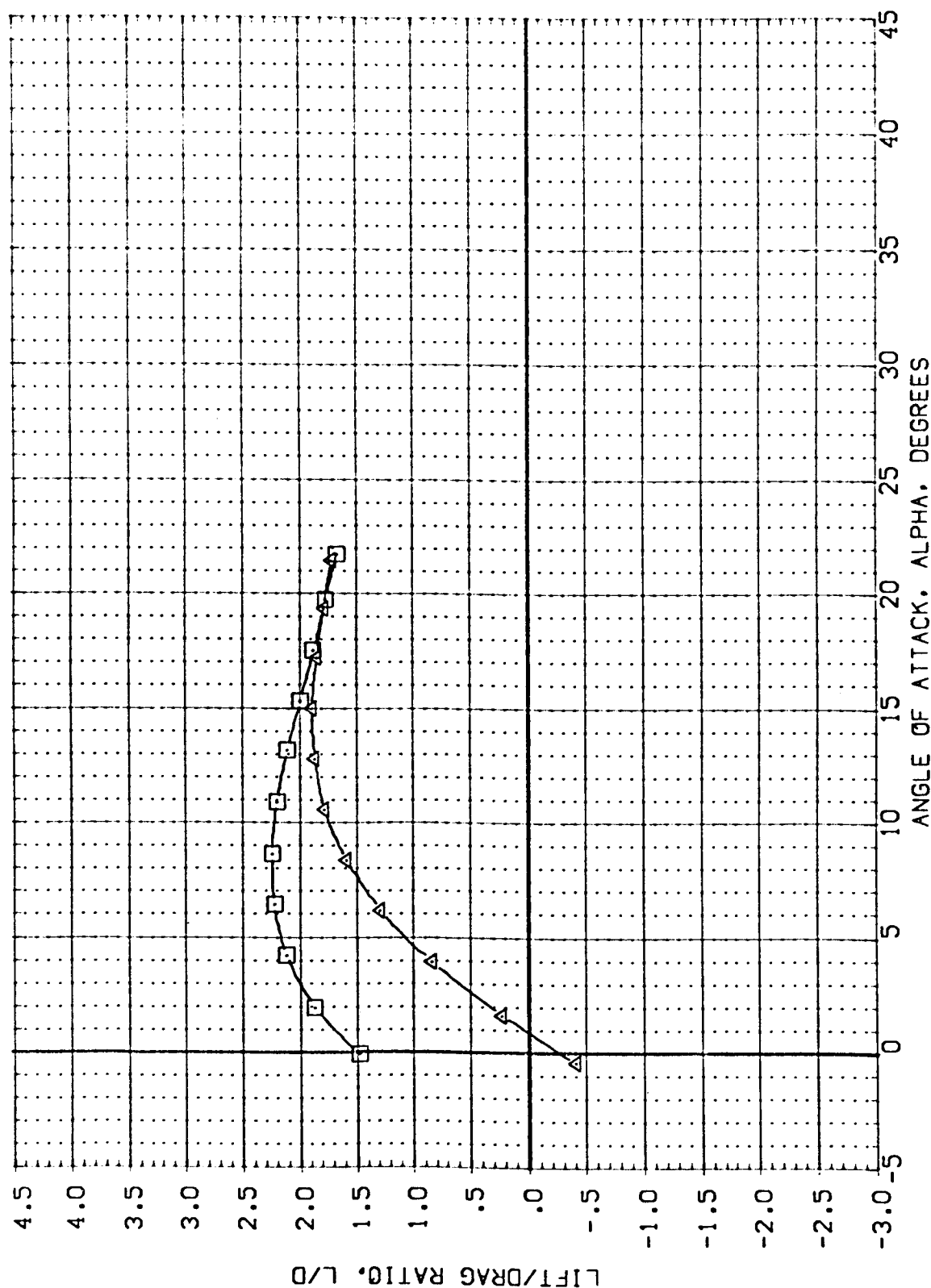


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

```
CCOMACH = 1.20
```

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDRBK	80FLAP	REFERENCE INFORMATION
(X8/S48)	MSFC 574 (CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87S62)	MSFC 574 (CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S64)	MSFC 574 (CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S62)	MSFC 574 (CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

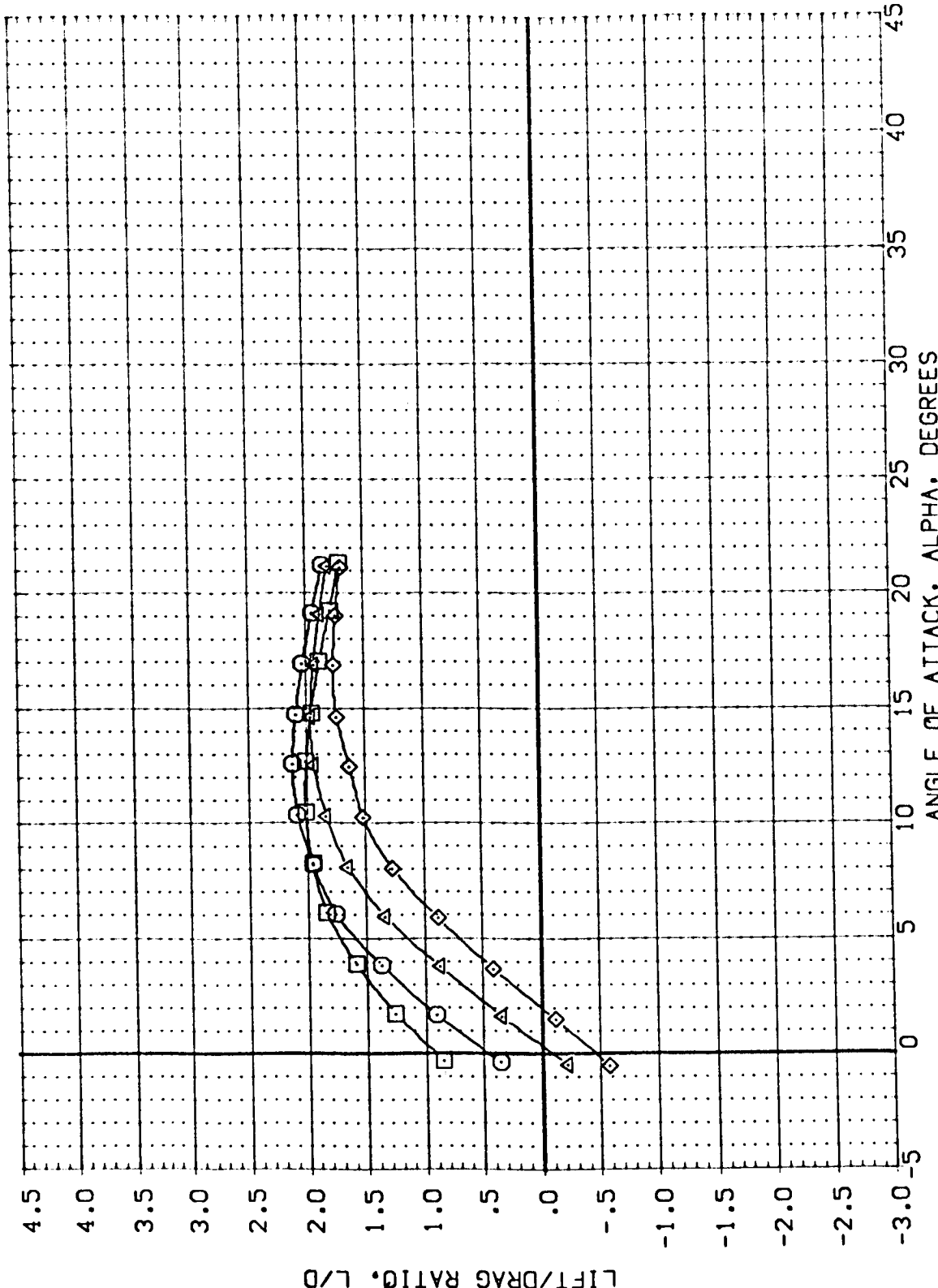


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87S48) MSFC 574(CA48) CRB 139

(F87S52) MSFC 574(CA48) CRB 39

(F87S64) MSFC 574(CA48) CRB 39

(F87S62) MSFC 574(CA48) CRB 39

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 15.000 999.990 13.750

.000 -40.000 999.990 -14.250

.000 -20.000 999.990 .000

ZVRP .0000

SCALE .0040

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000

BREF 938.7000

XVRP 838.7000

ZVRP .0000

SCALE .0040

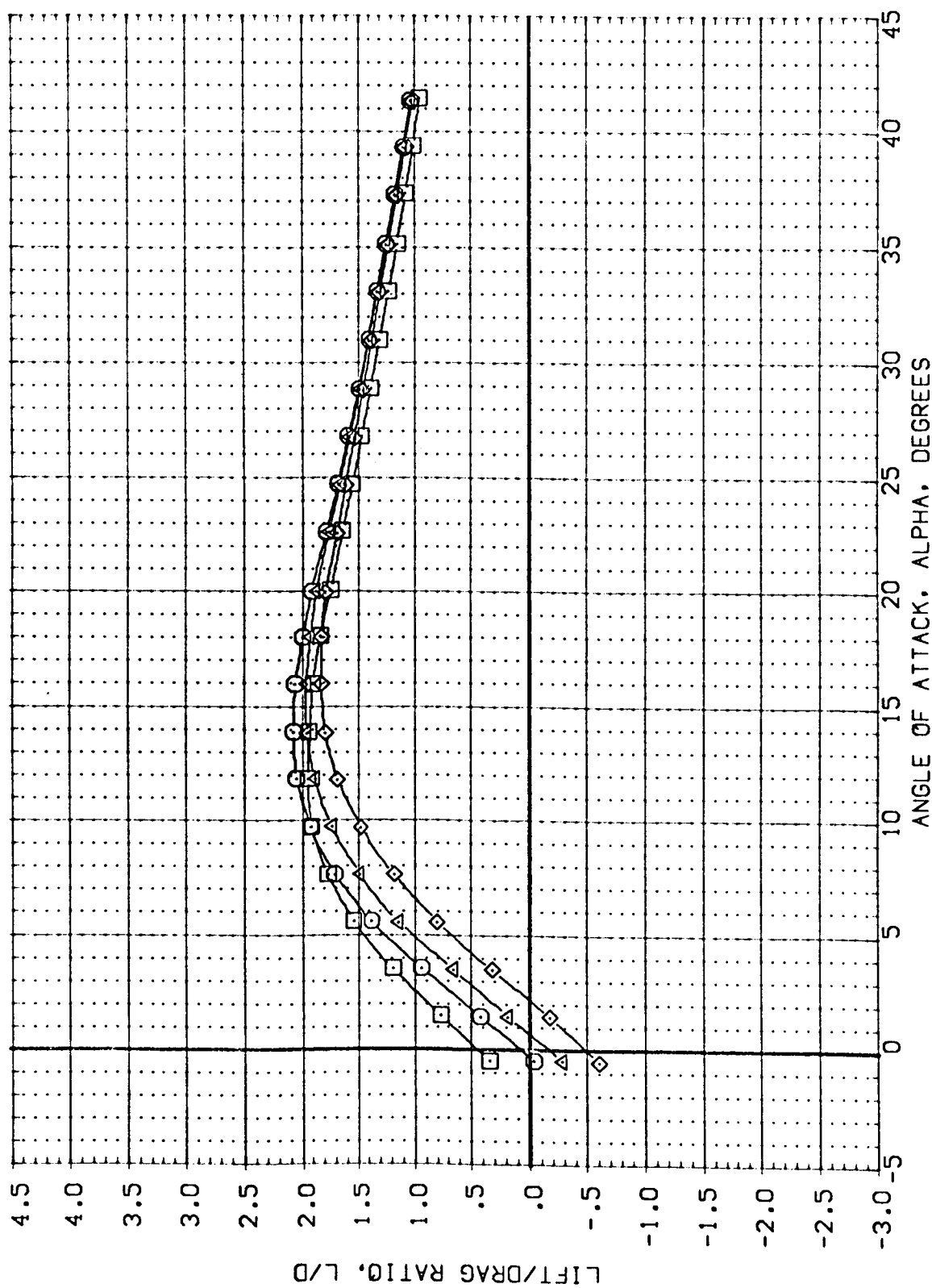


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CEJYACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) MSFC 574(CA48) CRB 139
 (87560) MSFC 574(CA48) CRB 139
 (87562) MSFC 574(CA48) CRB 139
 (87564) MSFC 574(CA48) CRB 139

BETA ELEVTR SPCBRK BCF LAP
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000
 .000 .000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 936.7000
 XVRD 838.7000
 ZVRD .0000
 SCALE .0040

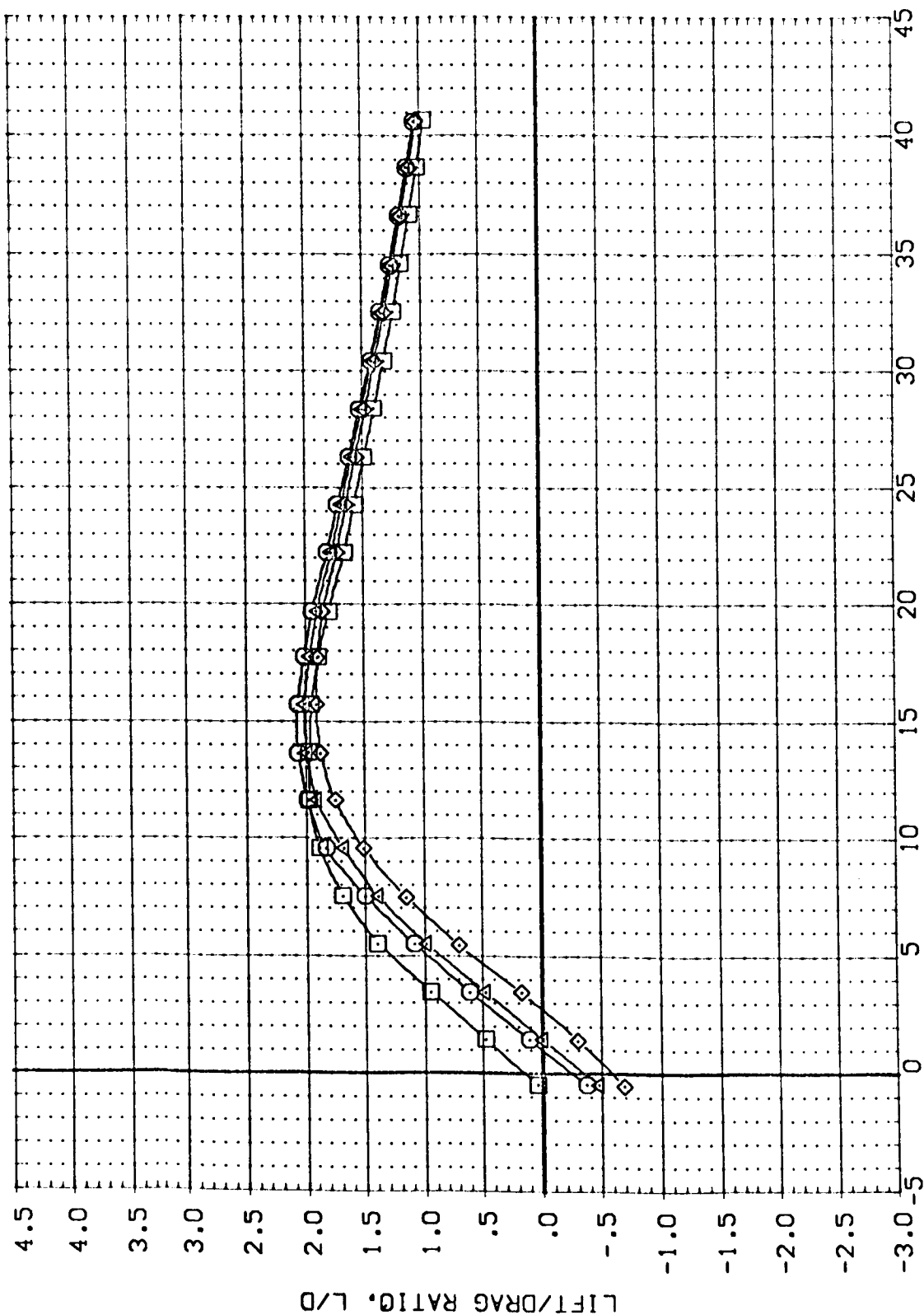


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87564)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87562)	MSC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XVBP 838.7000
						YVBP .0000
						ZMRP .0000
						SCALE .0000

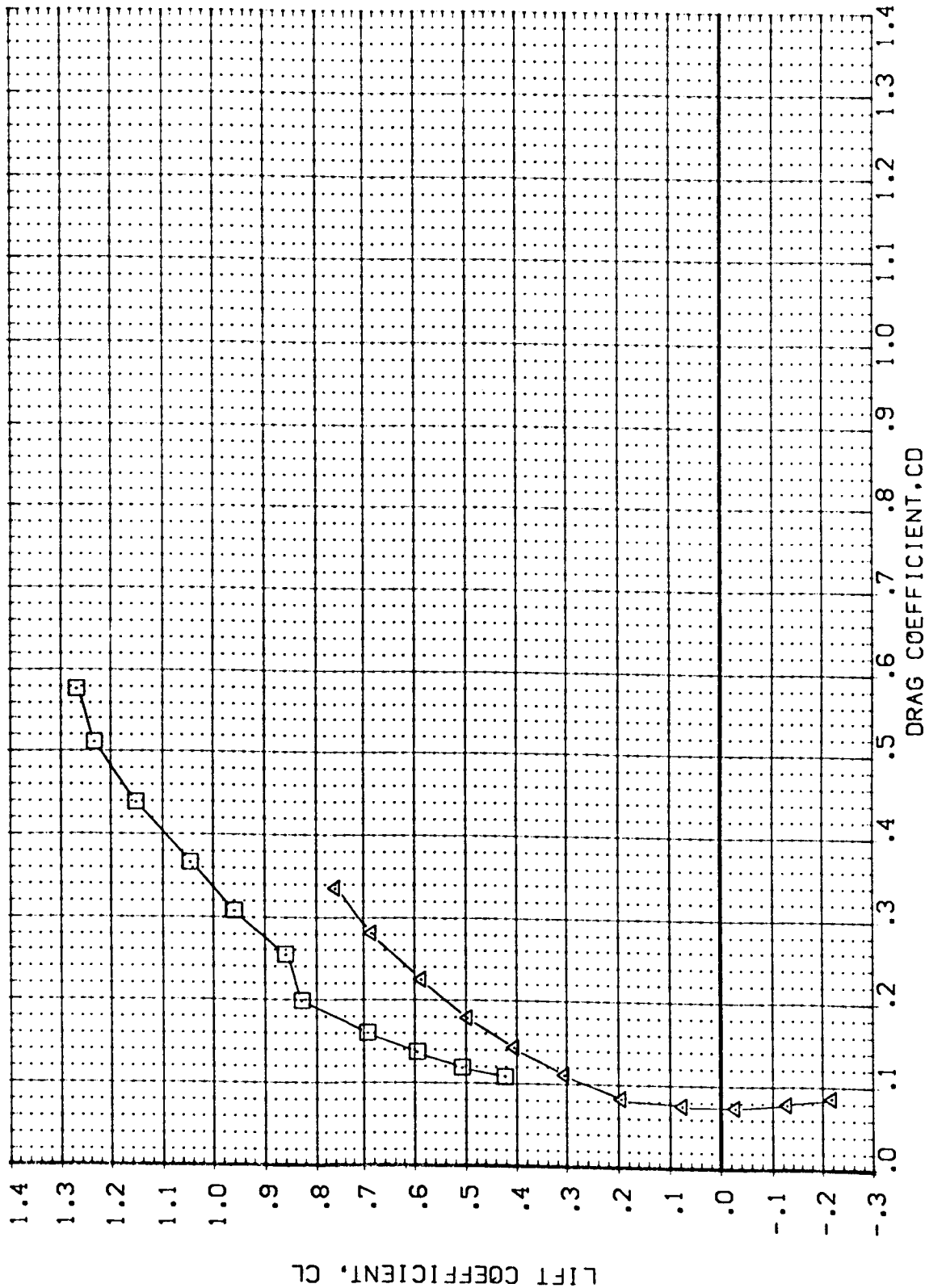
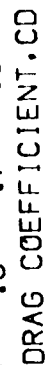


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
{X87S48}	DATA NOT AVAILABLE
{F8S60}	MSFC 574 (CA48) CR3 139
{F8YS64}	DATA NOT AVAILABLE
{F8YS62}	MSFC 574 (CA48) CR3 139



(B) VACH = .00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SG.F
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

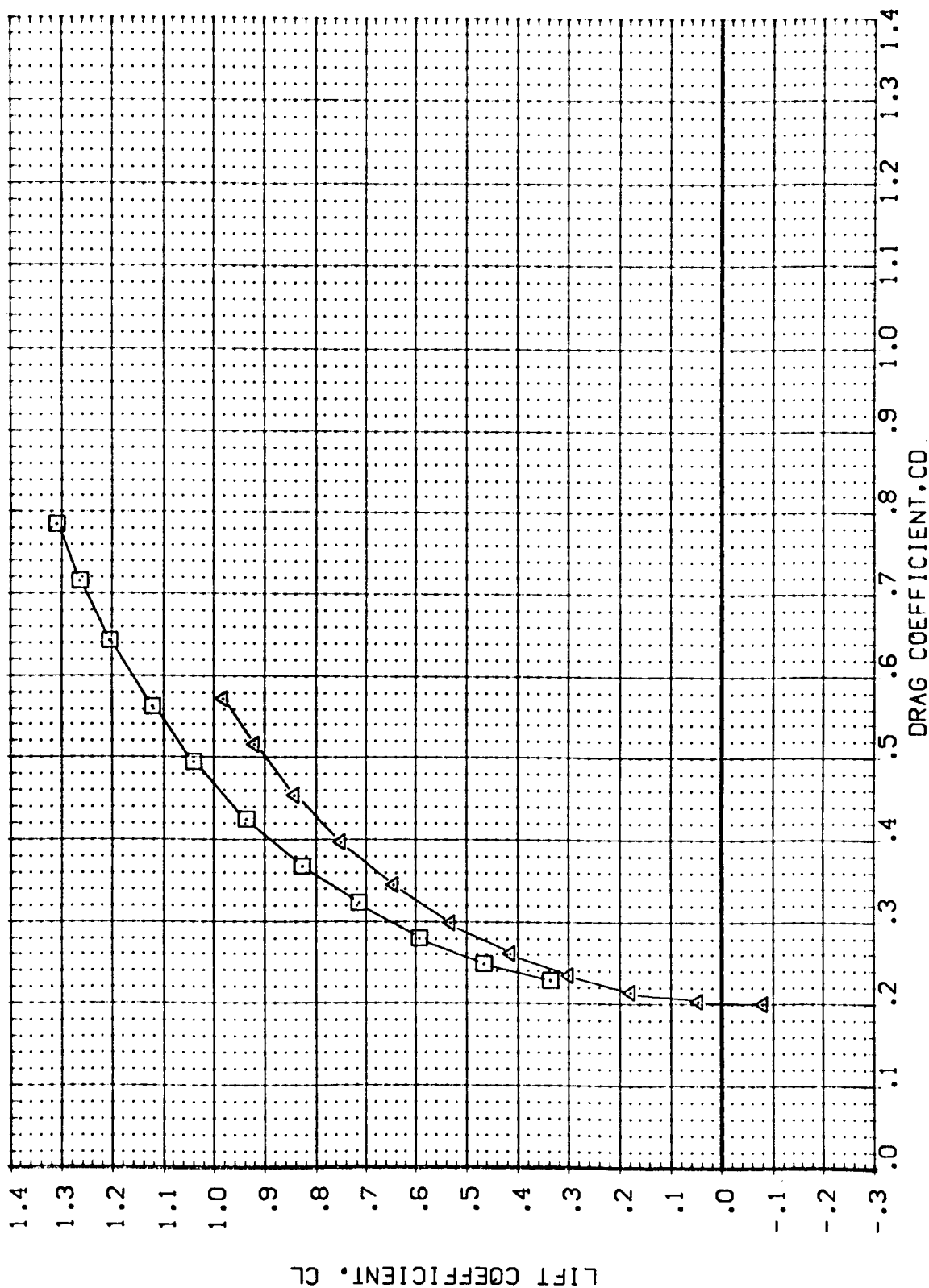


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S48)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S60)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S64)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S62)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

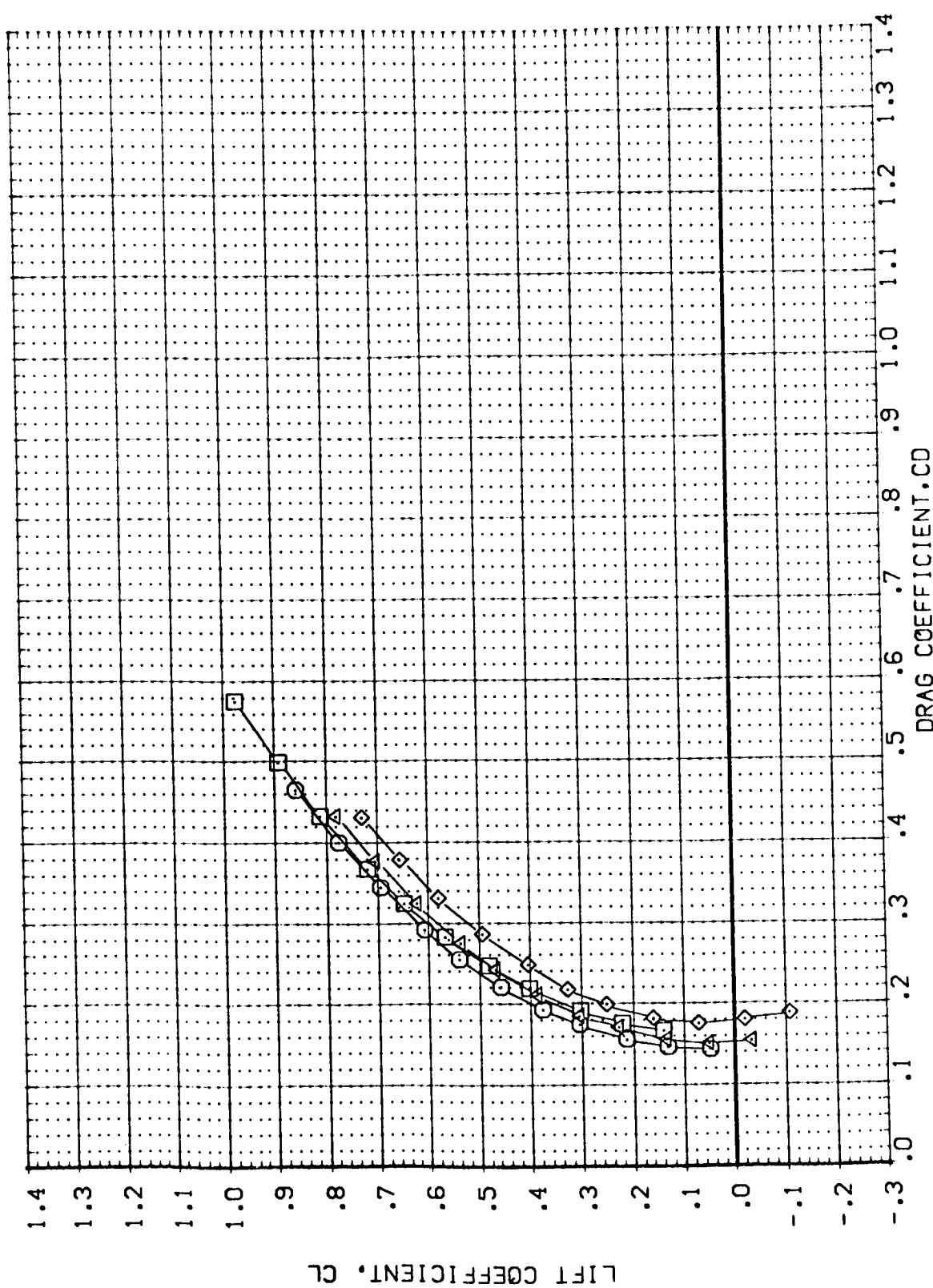


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) Q MSFC 574(CA48) CRB 139
 (F87560) X MSFC 574(CA48) CRB 139
 (F87564) X MSFC 574(CA48) CRB 139
 (F87562) X MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.F.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

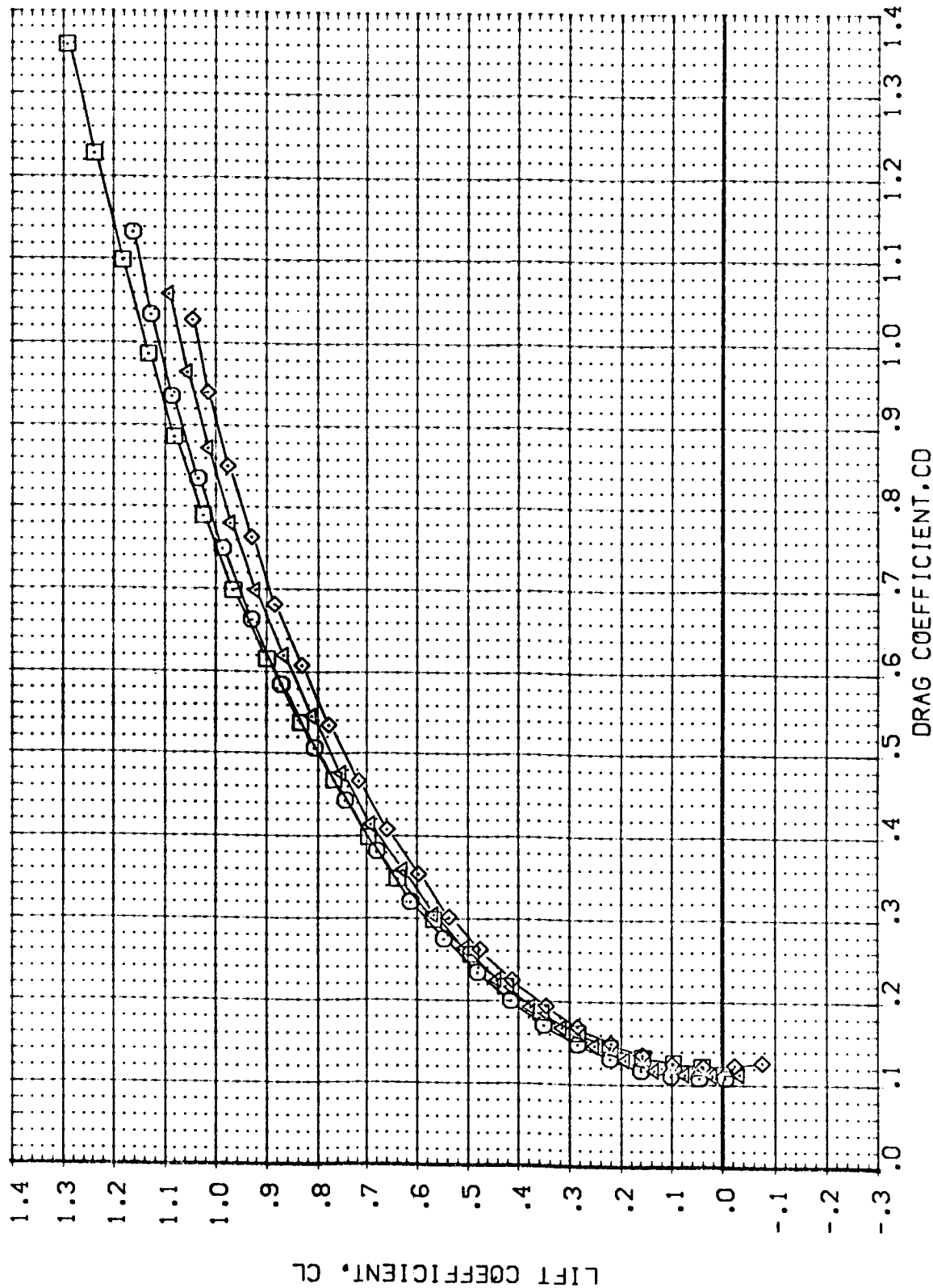


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CEOMACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	MSFC 574 (CA48) CRB 39	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87560)	MSFC 574 (CA48) CRB 39	.000	15.000	999.990	.000	LREF 474.8000 IN.
(F87564)	MSFC 574 (CA48) CRB 39	.000	-40.000	999.990	.000	BREF 936.7000 IN.
(F87568)	MSFC 574 (CA48) CRB 39	.000	-20.000	999.990	.000	XREF 838.7000 IN.
						WREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

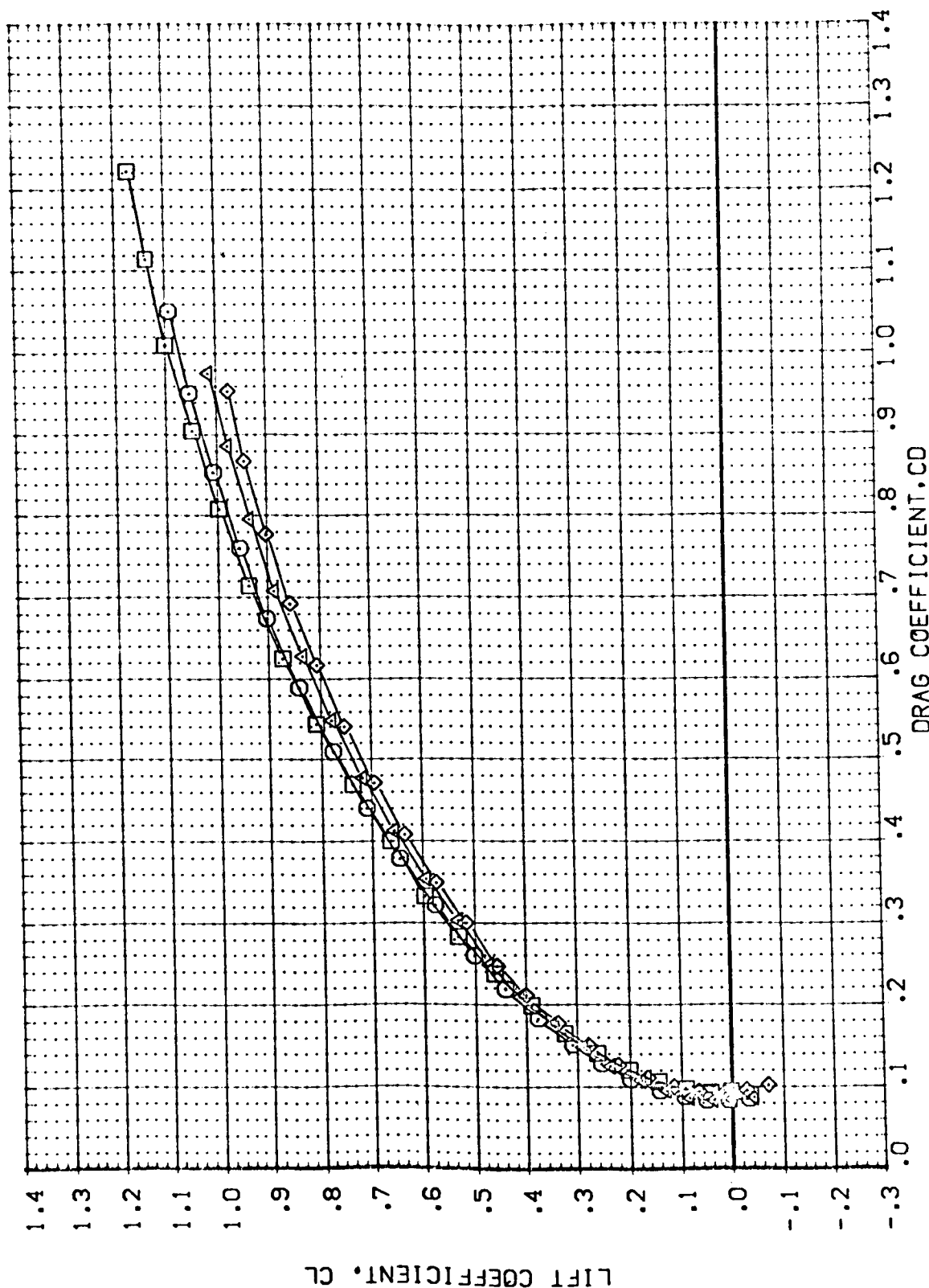


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C87548) \square MSFC 574(CA48) CRB 139
 (C87560) \square MSFC 574(CA48) CRB 139
 (C87564) \square DATA NOT AVAILABLE
 (C87562) \times MSFC 574(CA48) CRB 139

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 -13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 935.7000
 .000 -20.000 999.990 .000 XREF 864.5000
 .000 .0000 .0000 ZREF .0000
 .0000 .0000 .0000 SCALE .0040

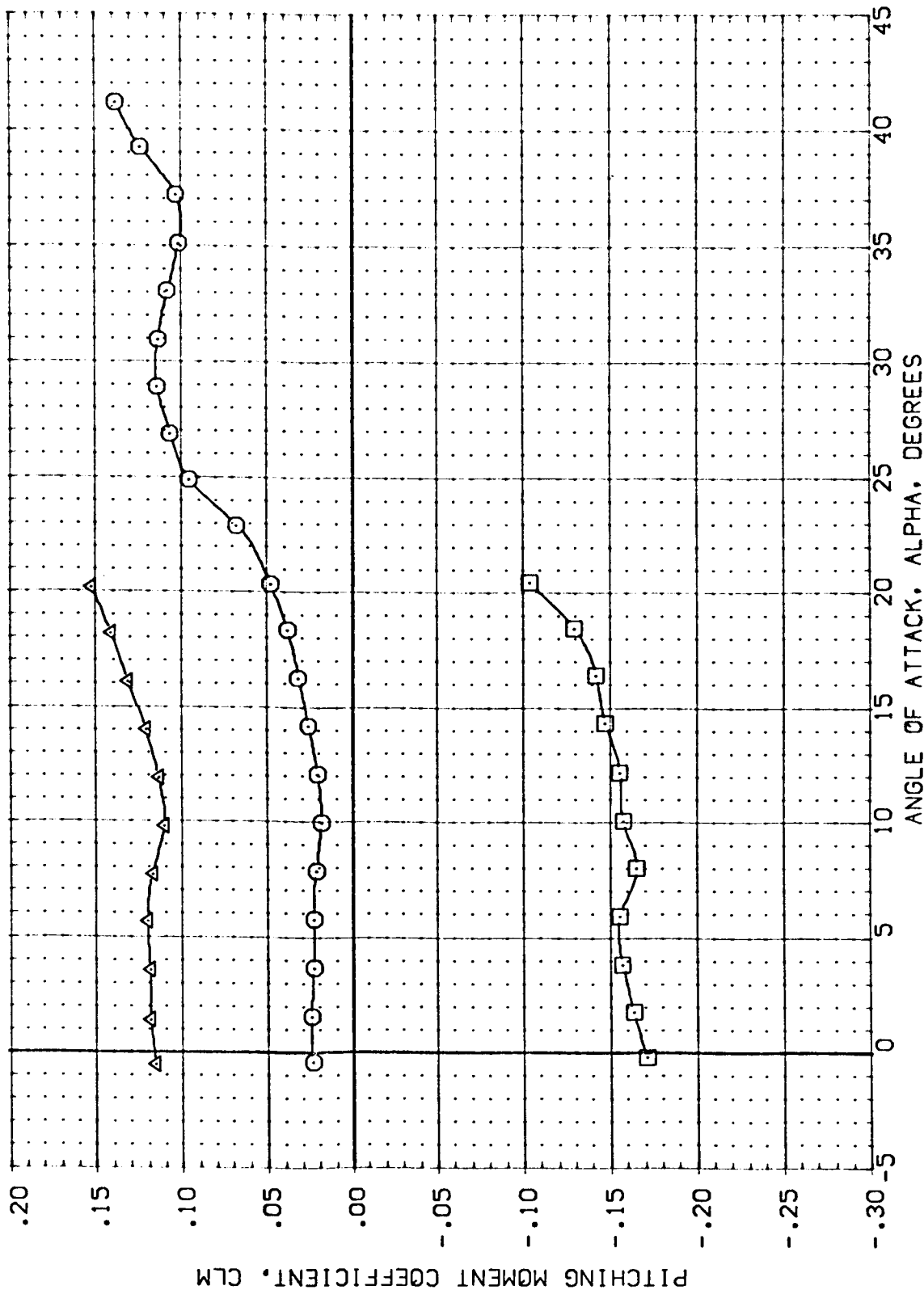


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(C87S48)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2680.0000
(C87S62)	MSFC 574(CA48) CRB 139	.000	.000	999.990	13.750	LREF 474.8000
(C87S64)	DATA NOT AVAILABLE	.000	15.000	999.990	-14.750	BREF 936.7000
(C87S66)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	.000	XVREF 864.5000
(C87S68)		.000	-20.000	999.990	.000	VWREF .0000
					7WREF .0000	SCALE .0040

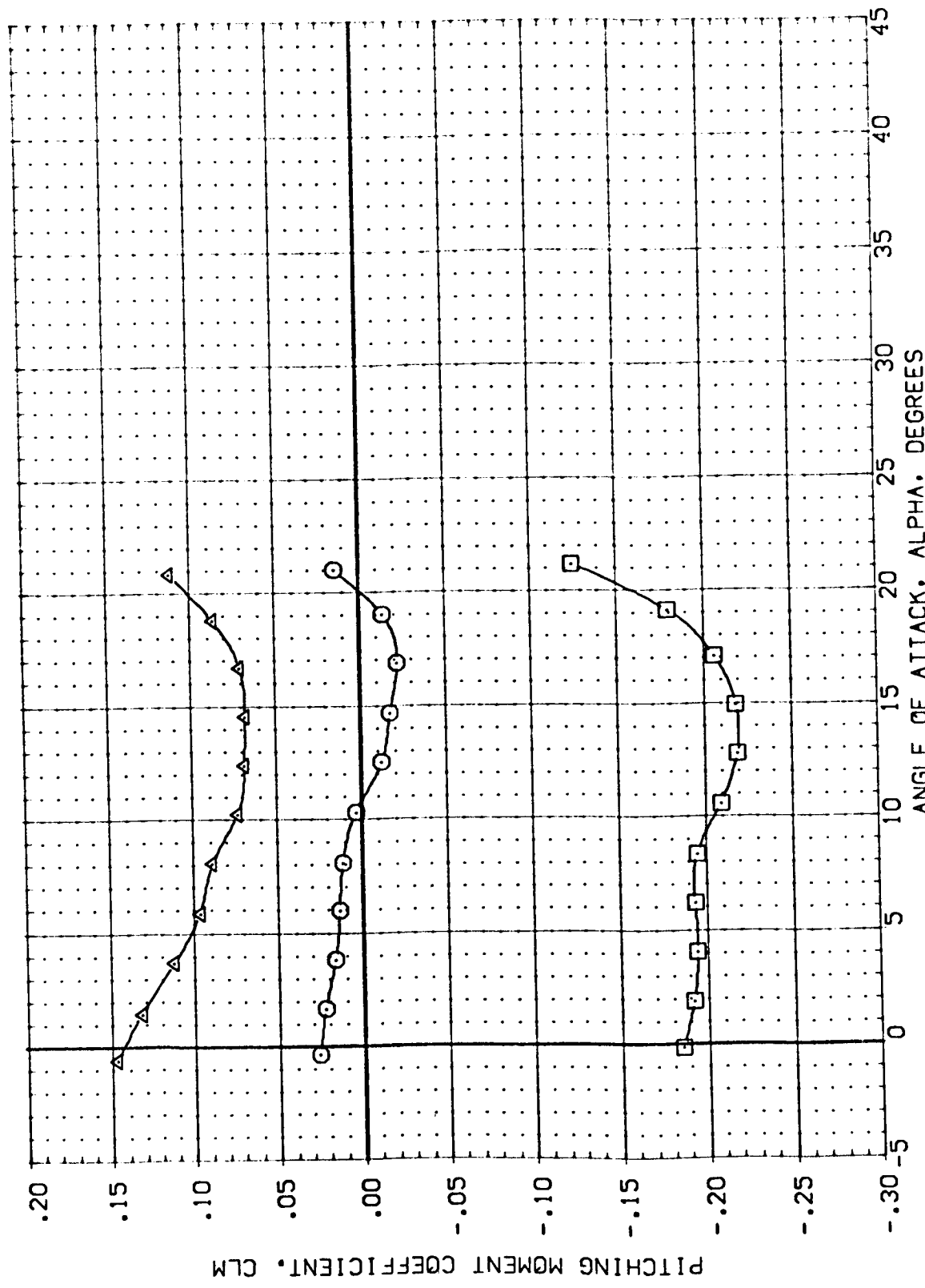


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (087548) MSFC 574(CA48) ORB 139
 (087560) MSFC 574(CA48) ORB 139
 (087564) DATA NOT AVAILABLE
 (087562) MSFC 574(CA48) ORB 139

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.750
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BREF 936.7000
 XMRP 864.5000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

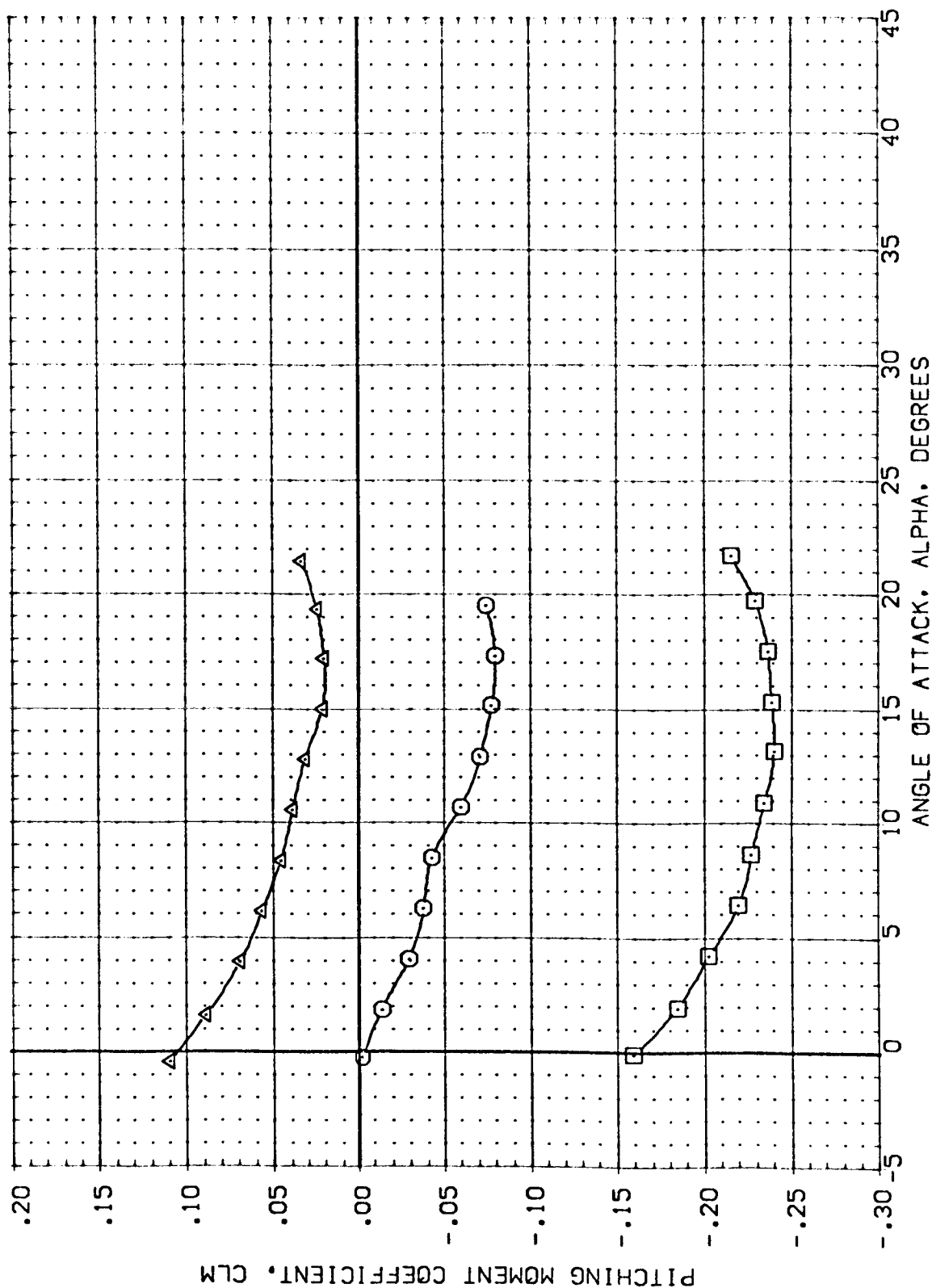


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87S48)	WSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SPCF 2690.0000
(G87S52)	WSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SPCF 474.8000
(G87S52)	WSFC 574(CA48) CRB 139	.000	15.000	999.990	.000	SPCF 836.7000
(G87S52)	WSFC 574(CA48) CRB 139	.000	-40.000	999.990	.000	SPCF 864.5000
(G87S52)	WSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	SPCF 864.5000
						VMOP .0000
						ZMOP .0000
						SCALE .0040

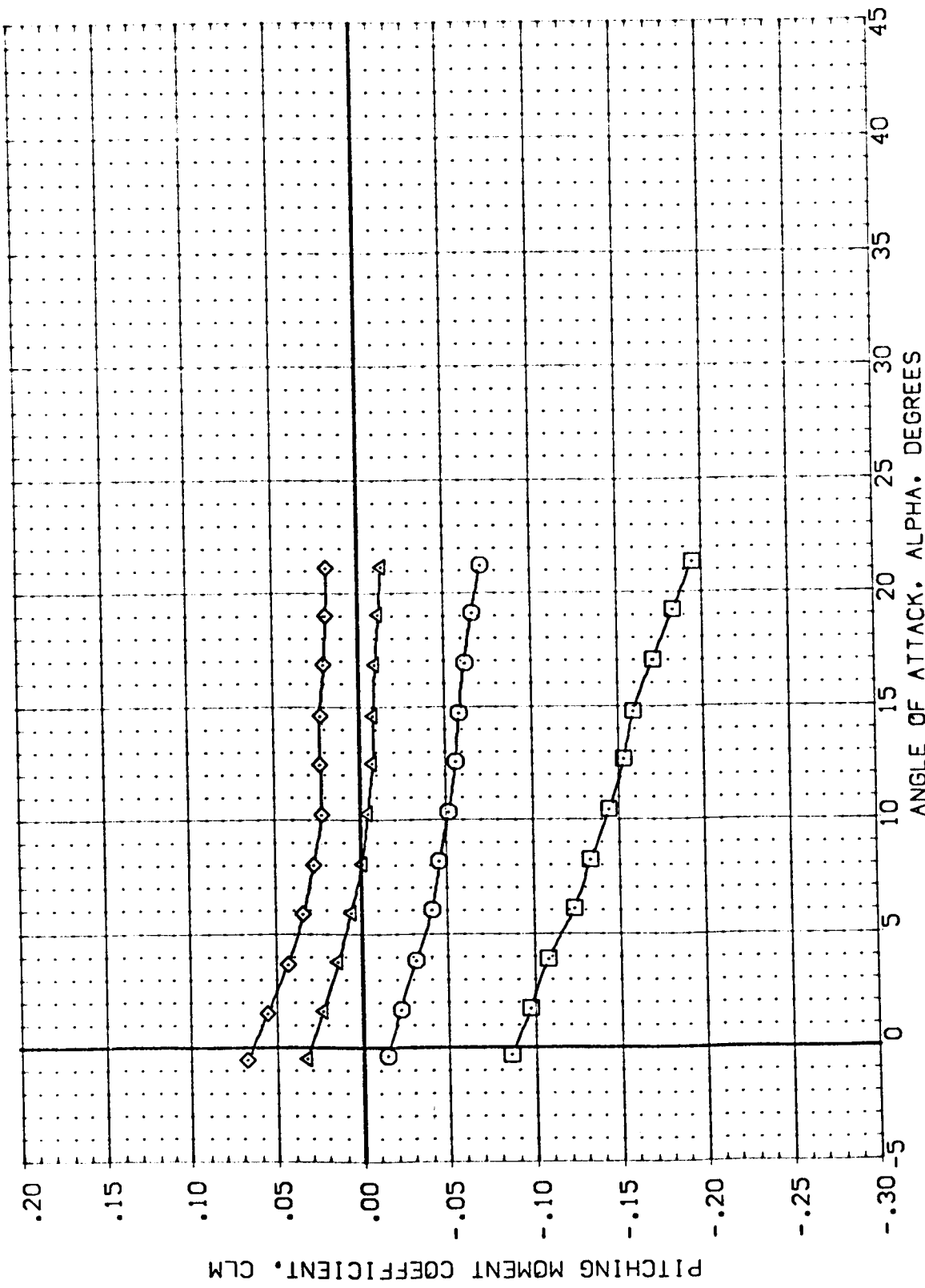


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)
 (C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C87S48) WSC 574(CA48) CRB 139
 (C87S52) WSC 574(CA48) CRB 139
 (C87S54) WSC 574(CA48) CRB 139
 (C87S56) WSC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.999 .000
 .000 .000 999.999 13.750
 .000 .000 999.999 -14.250
 .000 .000 999.999 .000
 .000 .000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BREF 936.7000
 XREF 864.5000
 YREF .0000
 ZREF .0000
 SCALE .0010

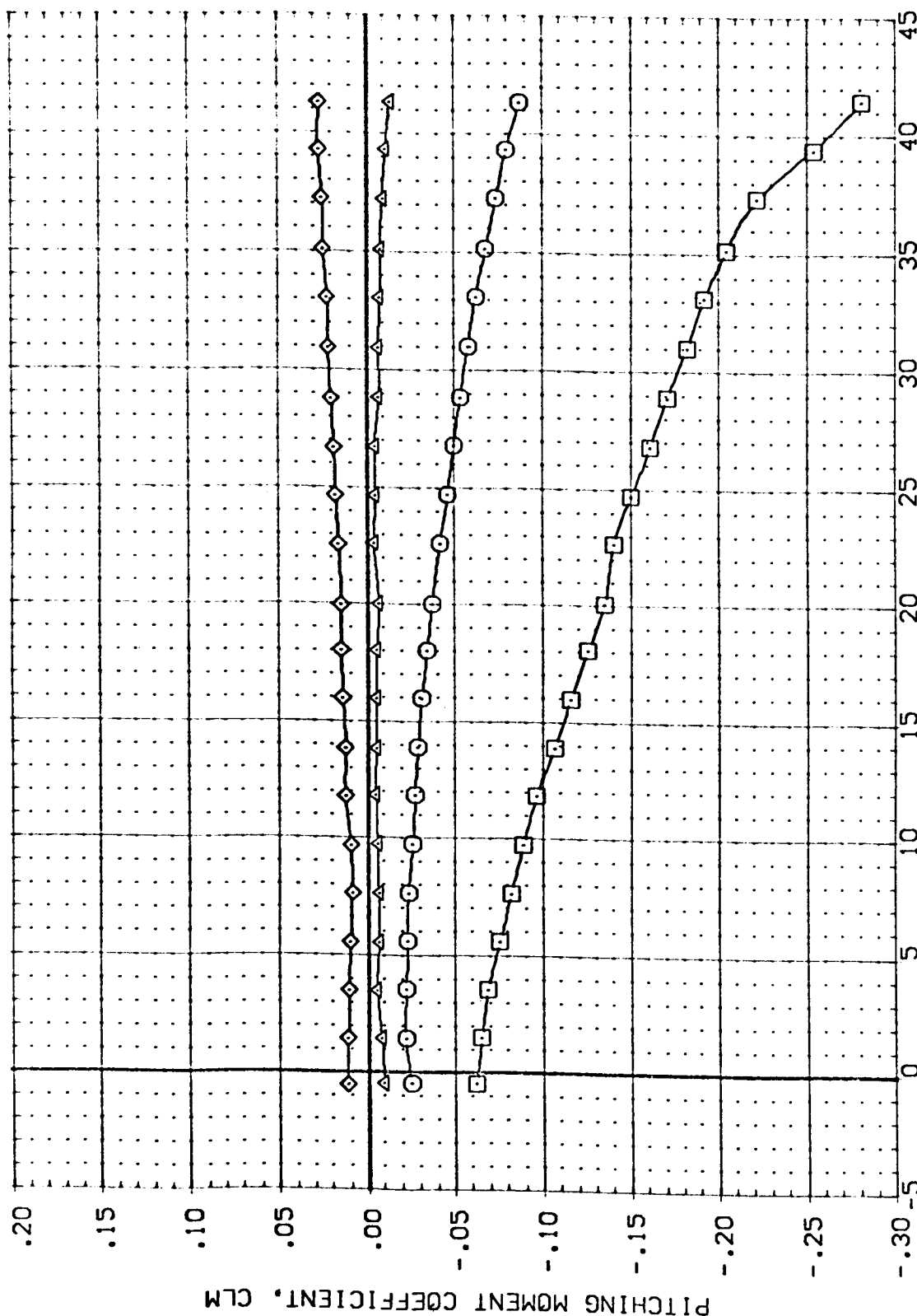


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

(EDMACH = 2.99

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPOILER	BOFLAP	REFERENCE INFORMATION
(C87548)	MSFC 574(CA48) CRB 139	.000	.000	.000	.000	SREF 2690.0000
(C87560)	MSFC 574(CA48) CRB 139	.000	.000	.000	.000	LREF 474.8000
(C87564)	MSFC 574(CA48) CRB 139	.000	.000	.000	.000	BREF 936.7000
(C87562)	MSFC 574(CA48) CRB 139	.000	.000	.000	.000	XREF 864.5000
						YREF 0.0000
						ZREF 0.0000
						SCALE .0040

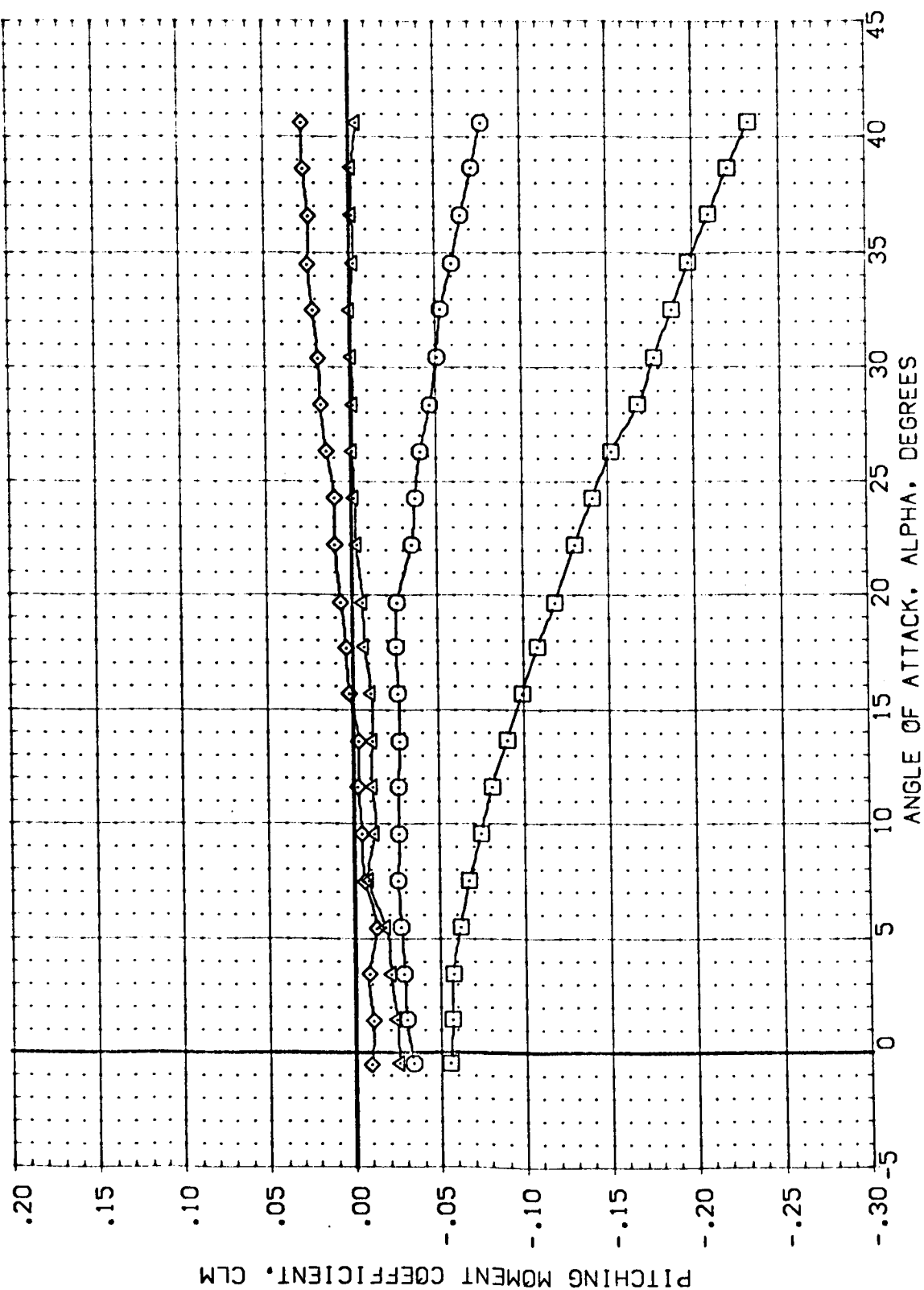


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87565)	MSFC 574(CA48) ORB 139 W/ALT N05E	.000	.000	999.990	.000	SREF 2690.0000 SS.F.T.
(F87567)	MSFC 574(CA48) ORB 139 W/ALT N05E	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87579)	MSFC 574(CA48) ORB 139 W/ALT N05E	.000	-20.000	999.990	.000	XREF 838.7000 N.
						YREF .0000
						ZREF .0000
						SCALE .0010

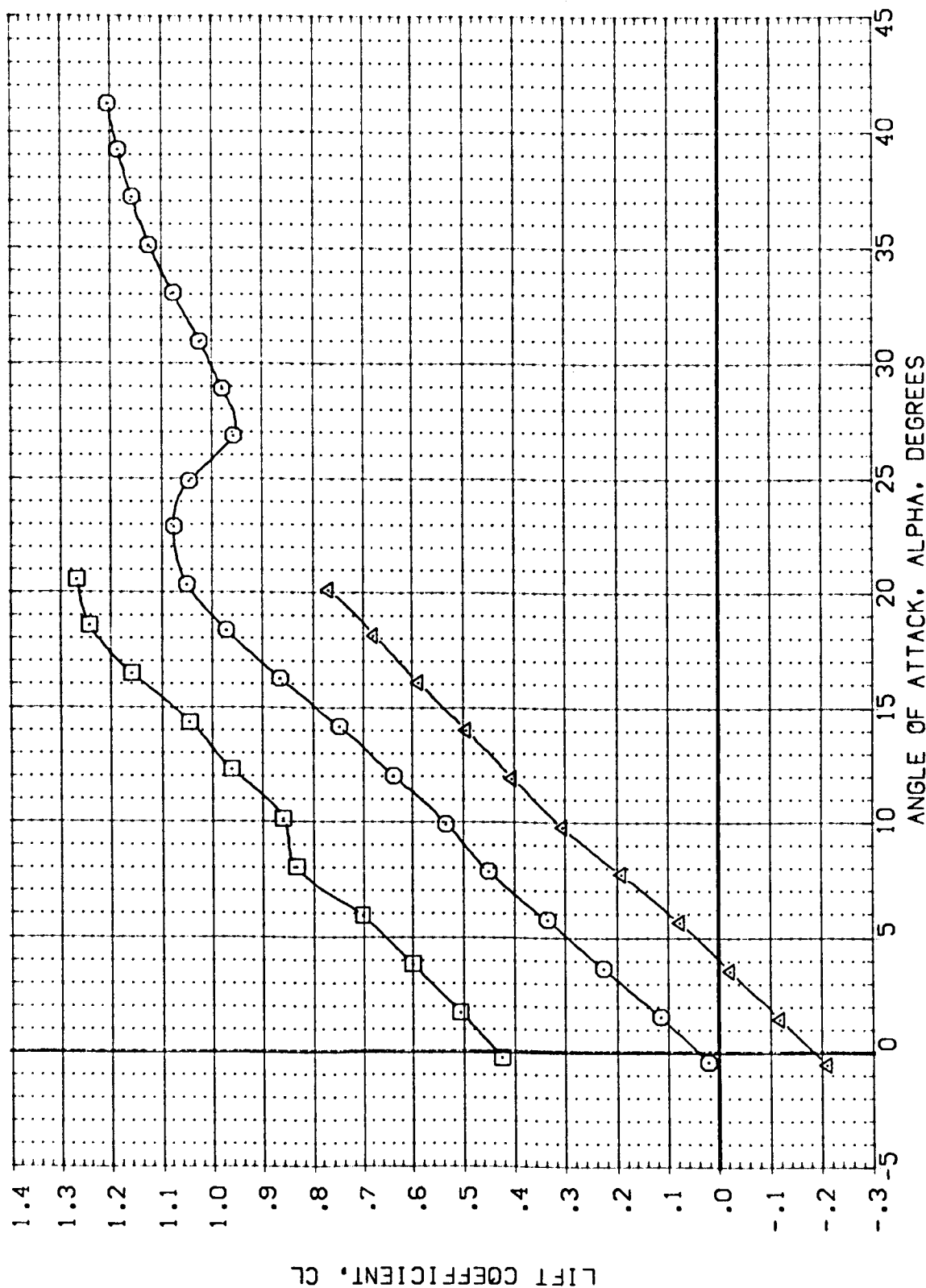


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	.000	LREF 474.8000
(F87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-13.750	BREF 936.7000
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XVBP 838.7000
						ZVBP .0000
						SCALE .0040

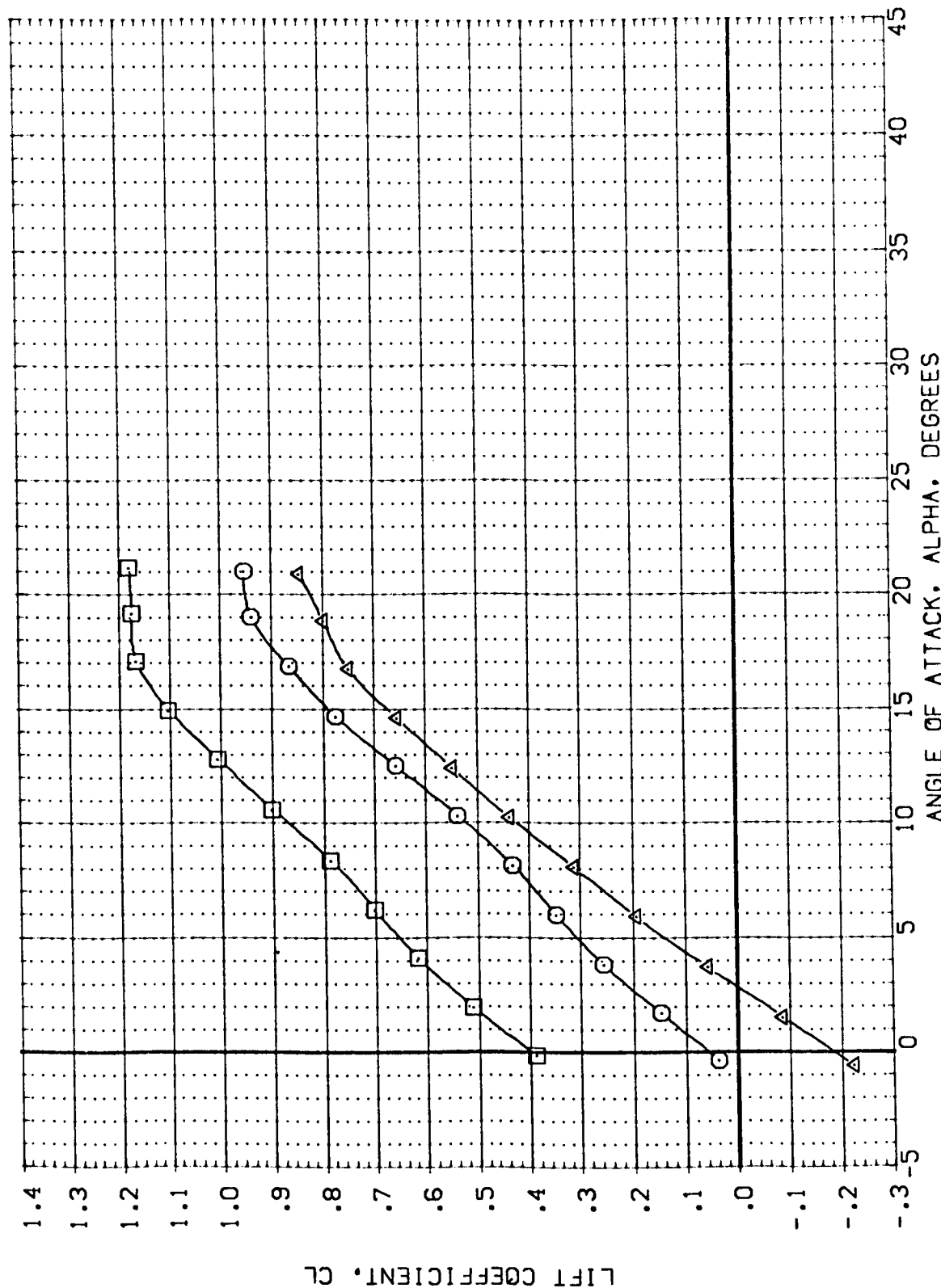


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S66) MSFC 574(CA48) ORB 139 V/ALT NOSE
 (F87S77) MSFC 574(CA48) ORB 139 V/ALT NOSE
 (F87S81) DATA NOT AVAILABLE
 (F87S79) MSFC 574(CA48) ORB 139 V/ALT NOSE

BETA ELEVTR SPDBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000
 ZMRP .0000
 SCALE .0040

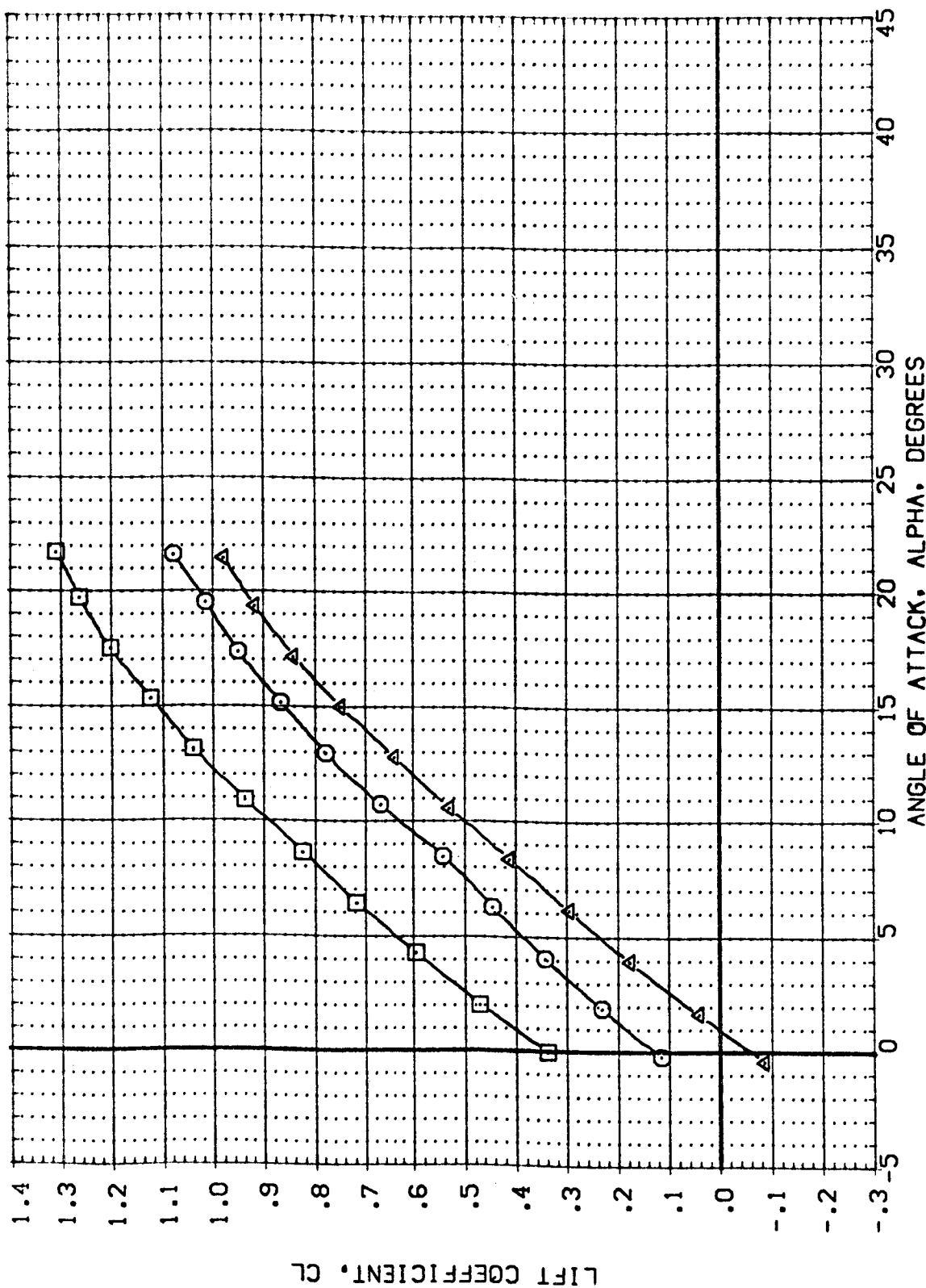


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPOROK	BOFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

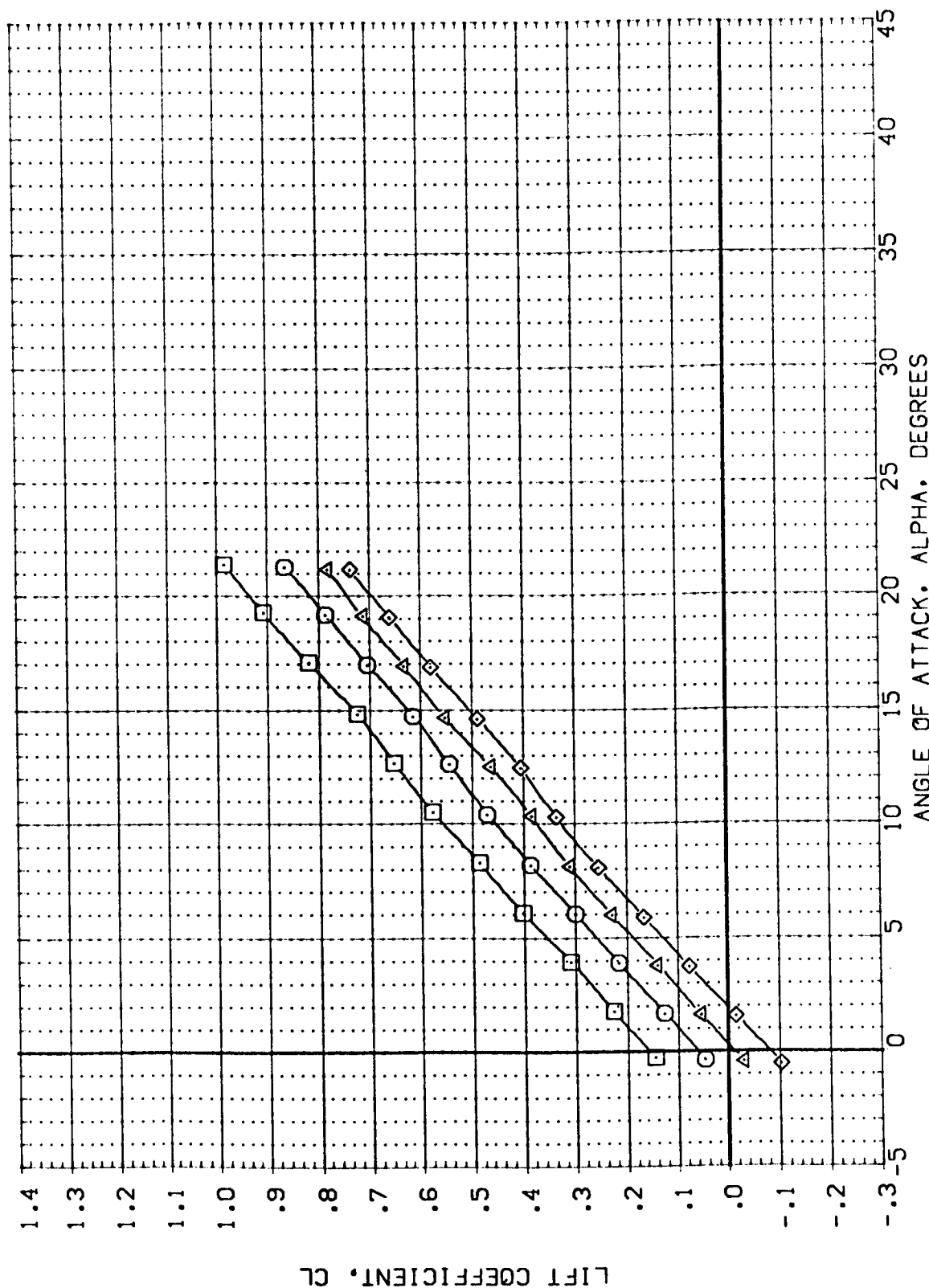


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

COMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(587566)	MSFC 574 (CA48) CR3 139 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(587577)	MSFC 574 (CA48) CR3 139 W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(587578)	MSFC 574 (CA48) CR3 139 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(587579)	MSFC 574 (CA48) CR3 139 W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

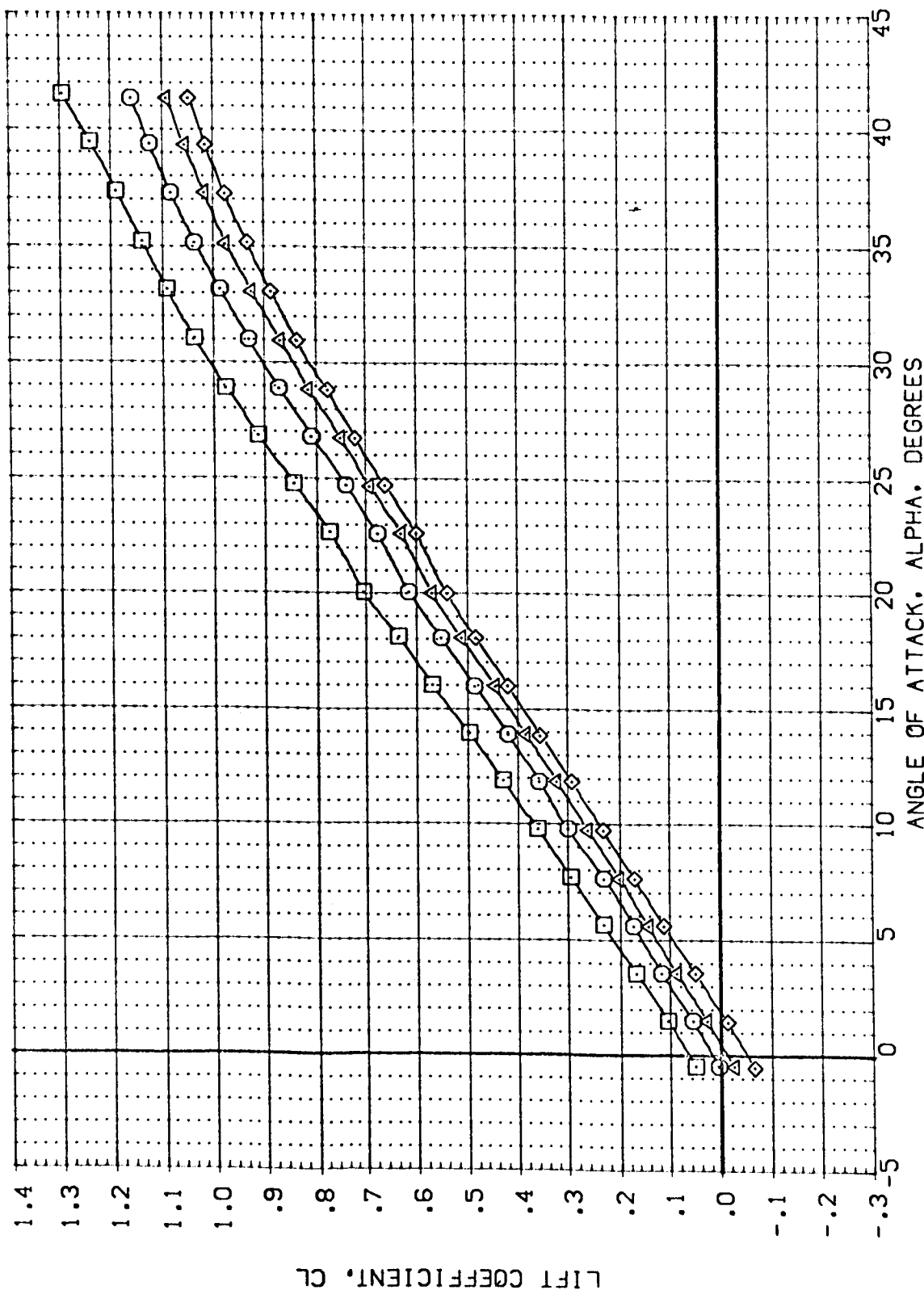


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION	SCALE
[F87566]	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000	50.000
[F87577]	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.8000	10.000
[F87581]	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	-14.250	BREF 936.7000	10.000
[F87579]	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	XMRP 839.7000	10.000
						YMRP .0000	10.000
						ZMRP .0000	10.000
						SCALE .0040	

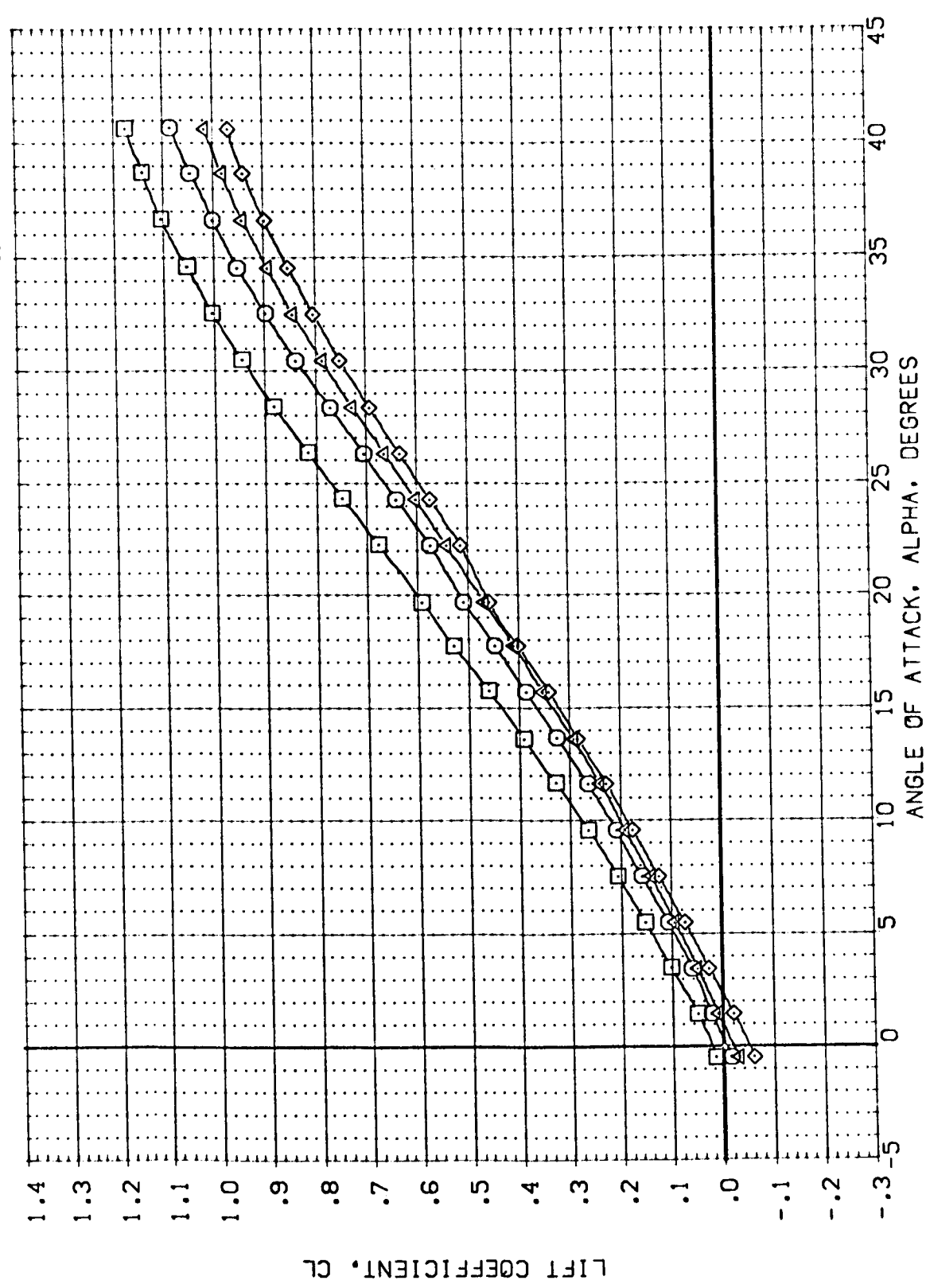


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(OA48) CRB 139 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000
(F87567)	MSFC 574(OA48) CRB 139 W/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87568)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87569)	MSFC 574(OA48) CRB 139 W/ALT NOISE	.000	-20.000	999.990	.000	XMRP 838.7000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

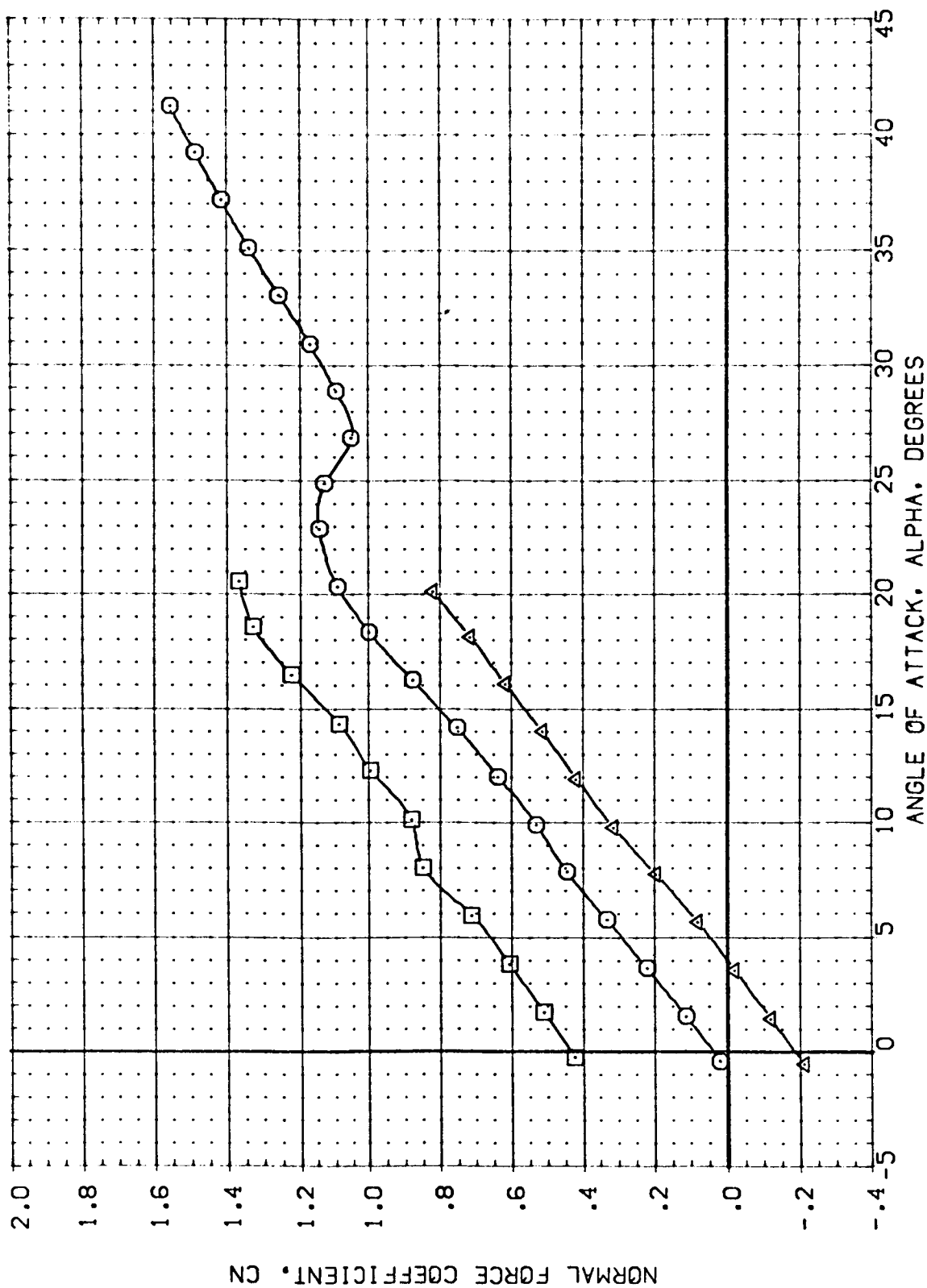


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87577)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	15.000	999.999	13.750	LREF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-20.000	999.999	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0340

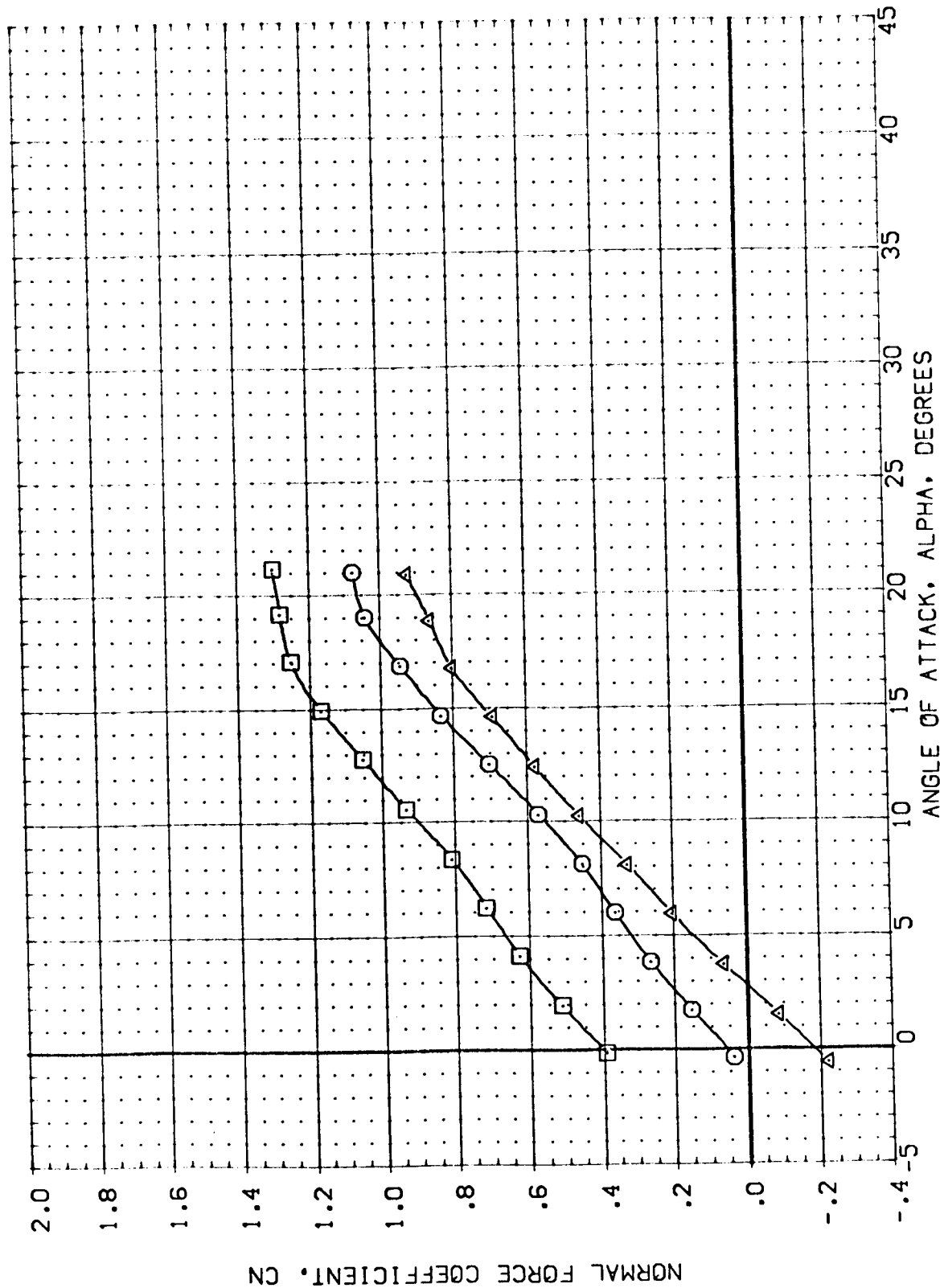


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S77)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LRFF 474.8000
(F87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BRFF 938.7000
(F87S79)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

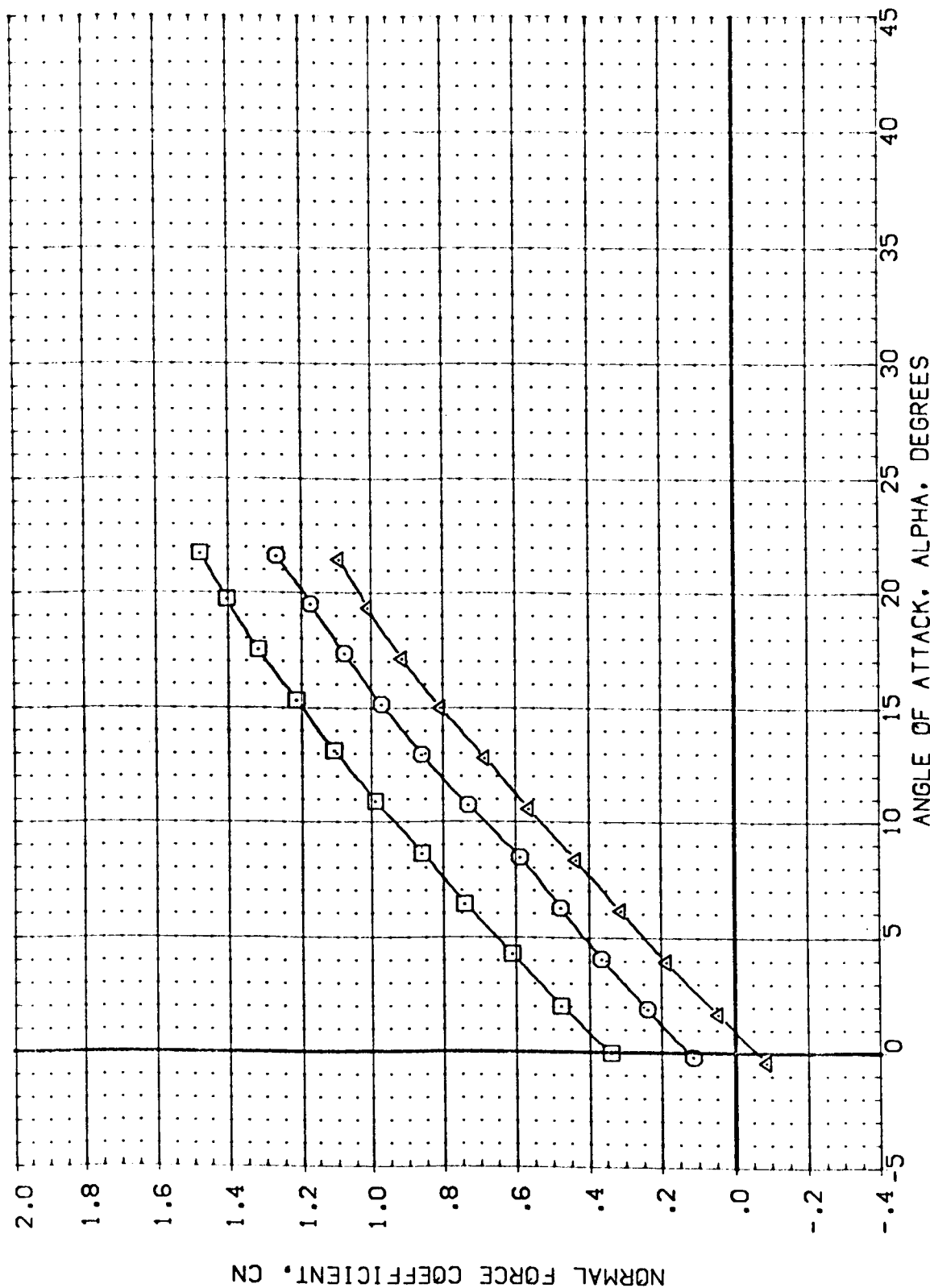


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C) VACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
MSFC 574(CA48)	CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SPREF 2690.0000 SC.F.
MSFC 574(CA48)	CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000 IN.
MSFC 574(CA48)	CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.200	SPREF 936.7000
MSFC 574(CA48)	CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.0000
						YREF .0000
						ZREF .0000
						SCALE .0010

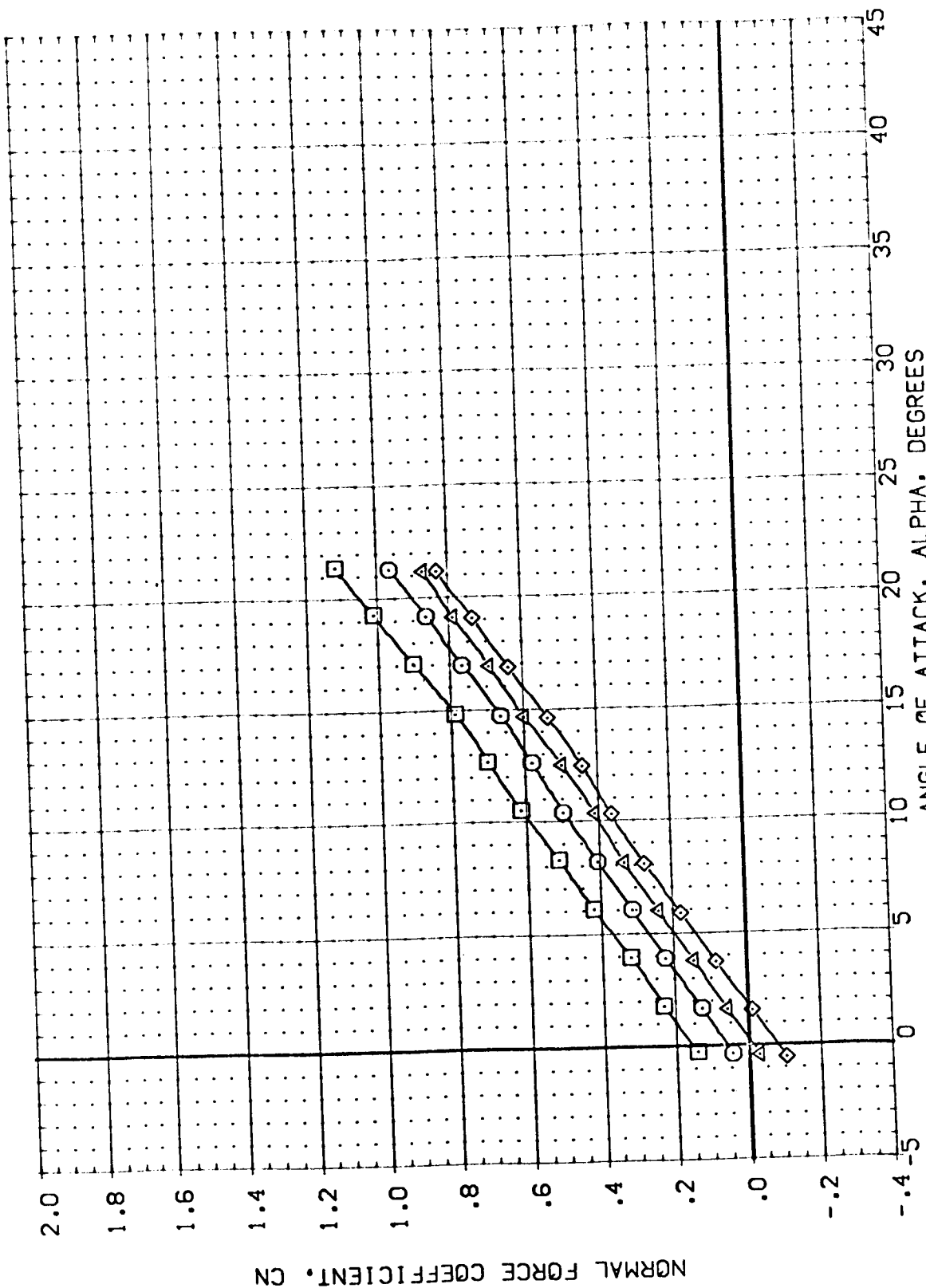


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

COMACH = 1.95

DATA SET SYMBOL	CONF:GURATION	DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE	INFORMATION
(F87566)	MSFC	574(CA48) CRB [39 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690
(F87577)	MSFC	574(CA48) CRB [39 W/ALT NOSE	.000	.000	999.990	13.750	LREF	674
(F87581)	MSFC	574(CA48) CRB [39 W/ALT NOSE	.000	.000	999.990	-14.250	BREF	938
(F87579)	MSFC	574(CA48) CRB [39 W/ALT NOSE	.000	.000	999.990	.000	VMRP	838
							ZMRP	.0000
							SCALE	.0040

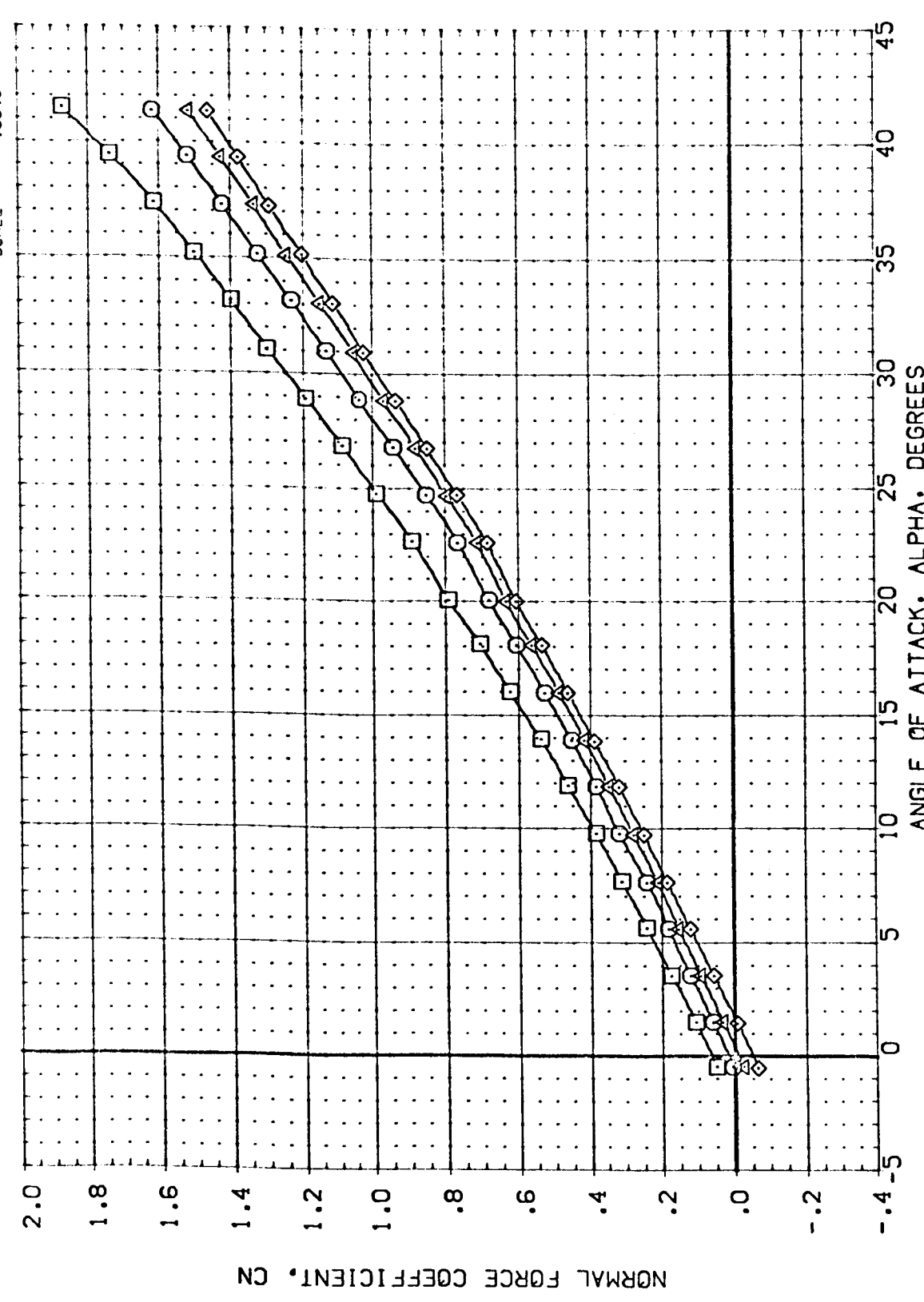


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2890.0000 SC.FT.
(F87577)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
						VM20 .0000
						VM25 .0000
						VM30 .0000
						VM35 .0000
						VM40 .0000
						VM45 .0000
						VM50 .0000
						SCALE .0010

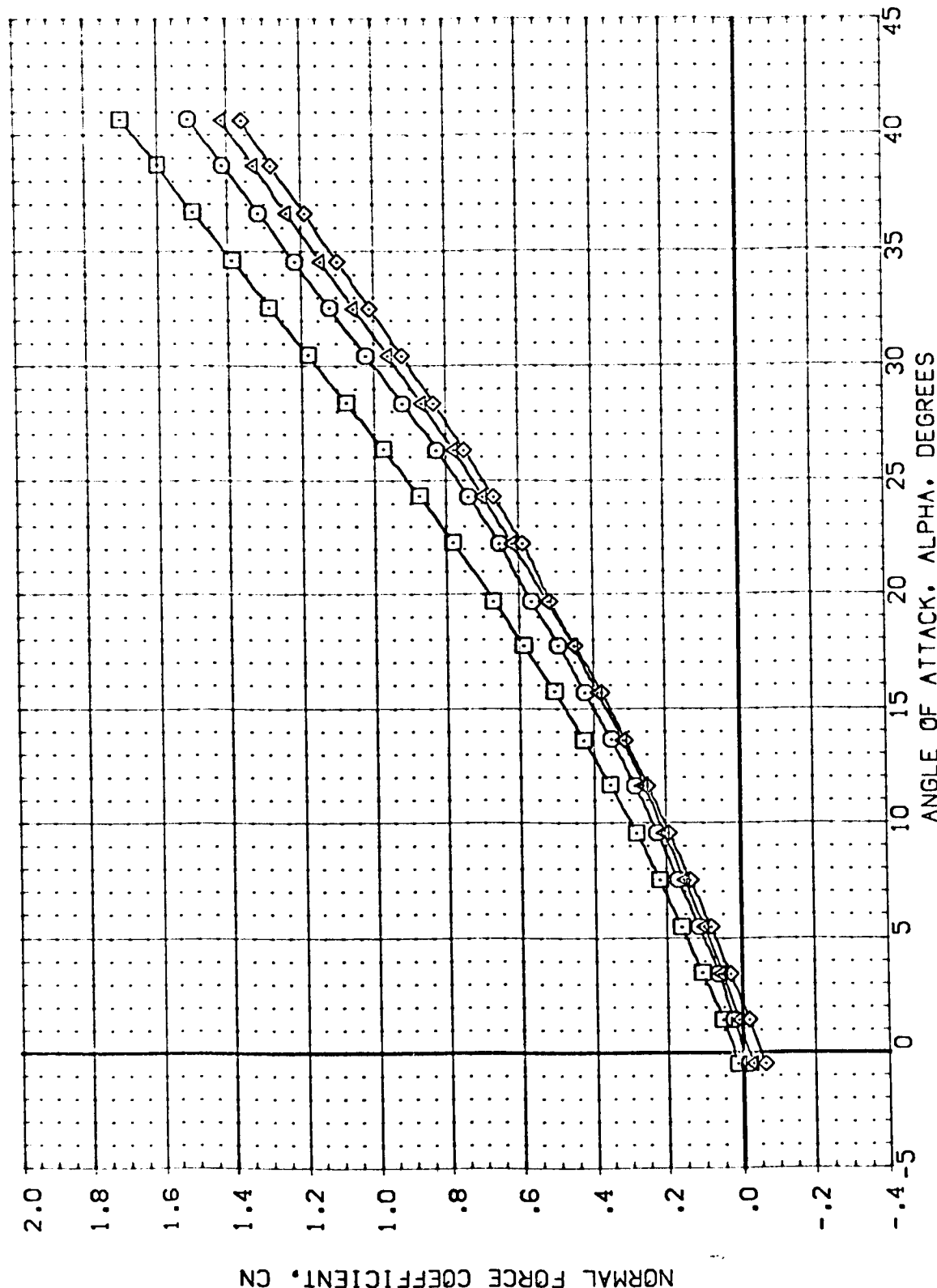


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F87566) = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0010

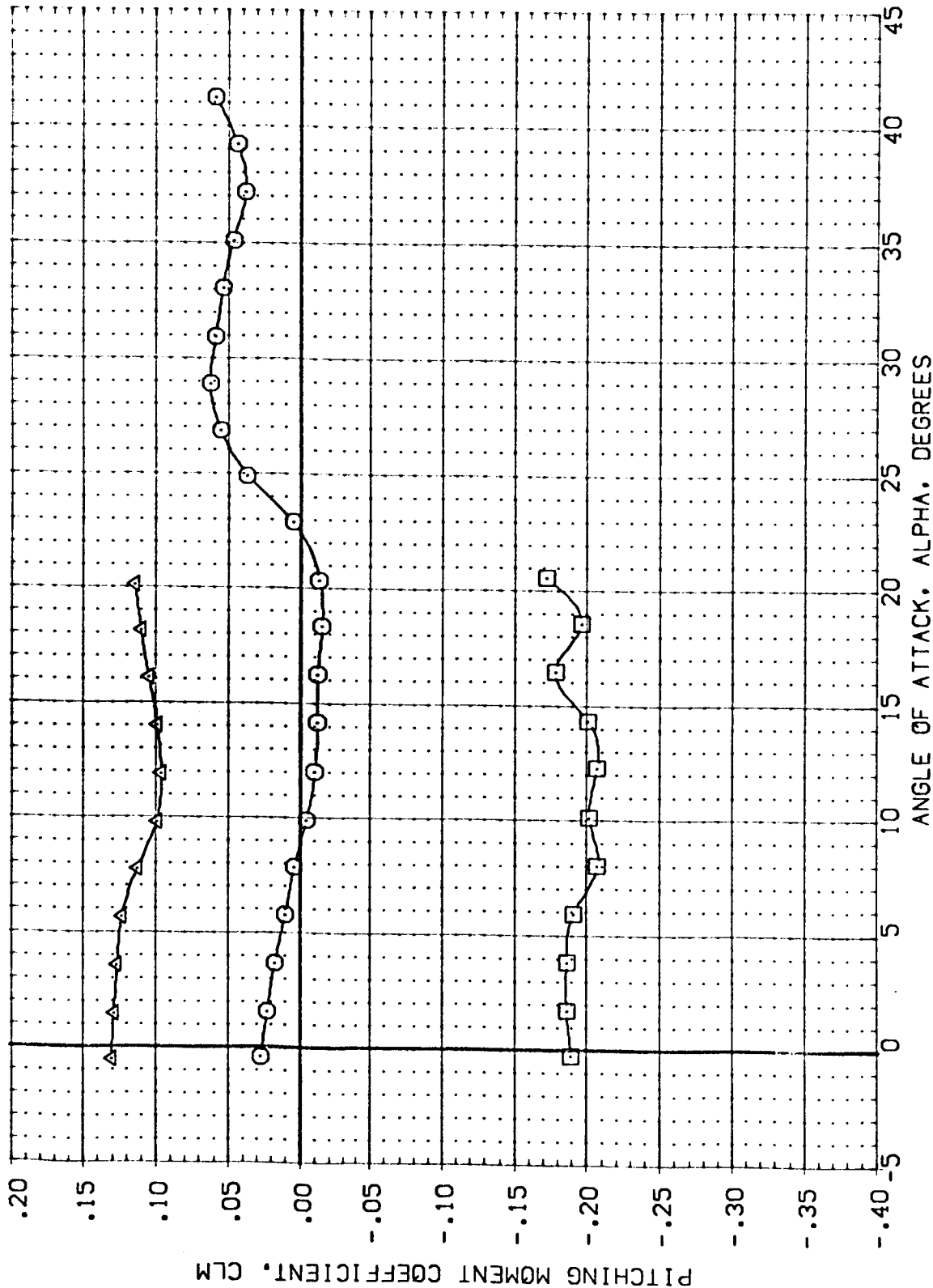


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	-13.750	LREF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

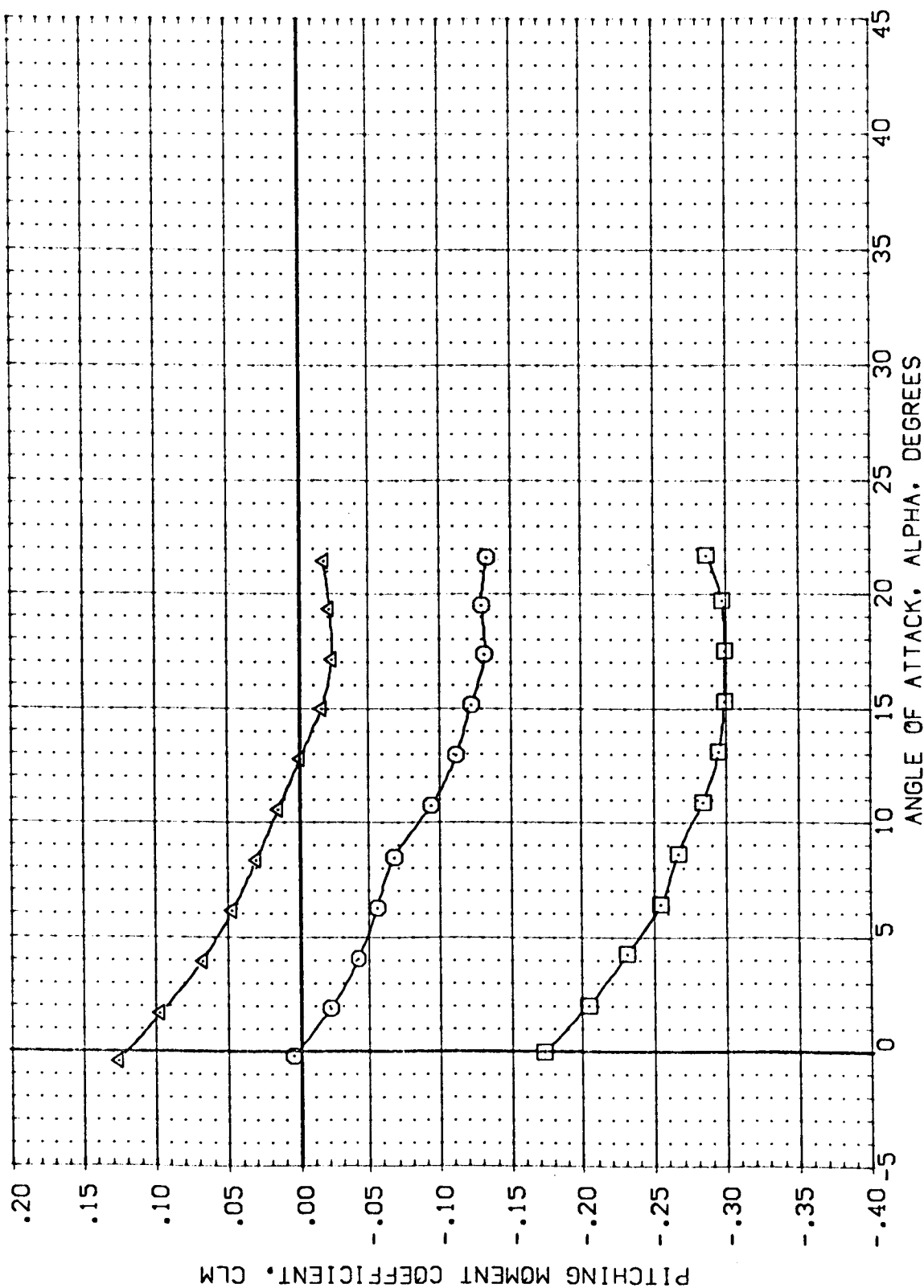


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOCLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690 .0000
(F87S77)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474 .8000
(F87S81)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936 .7000
(F87S79)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838 .7000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

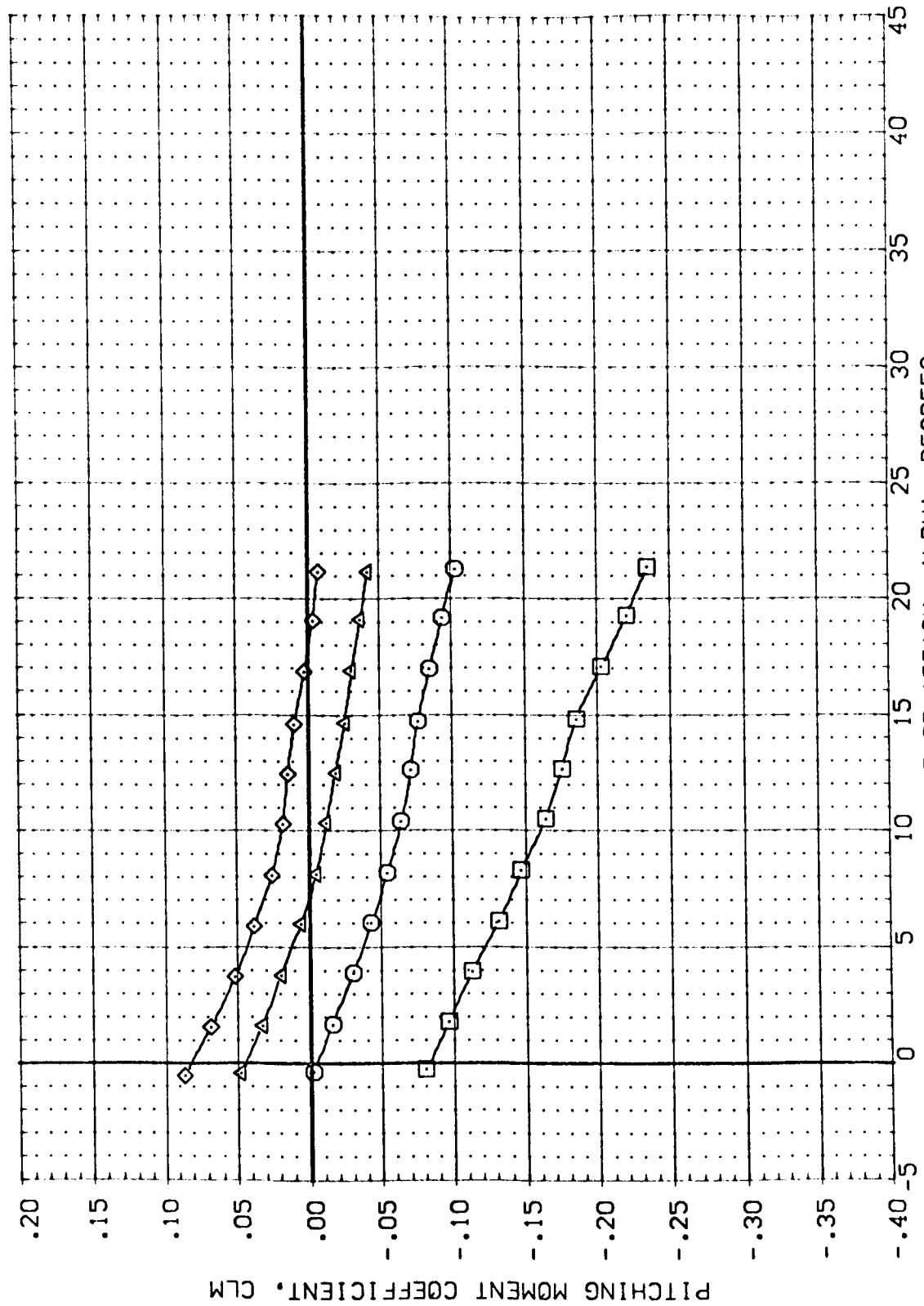


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CO)MACH = 1.95
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DATA SET SYMBOL CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BDCLAP	REFERENCE INFORMATION
(F87S69)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S77)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	YMRP 838.7000
						ZMRP .0000
						SCALE .0040

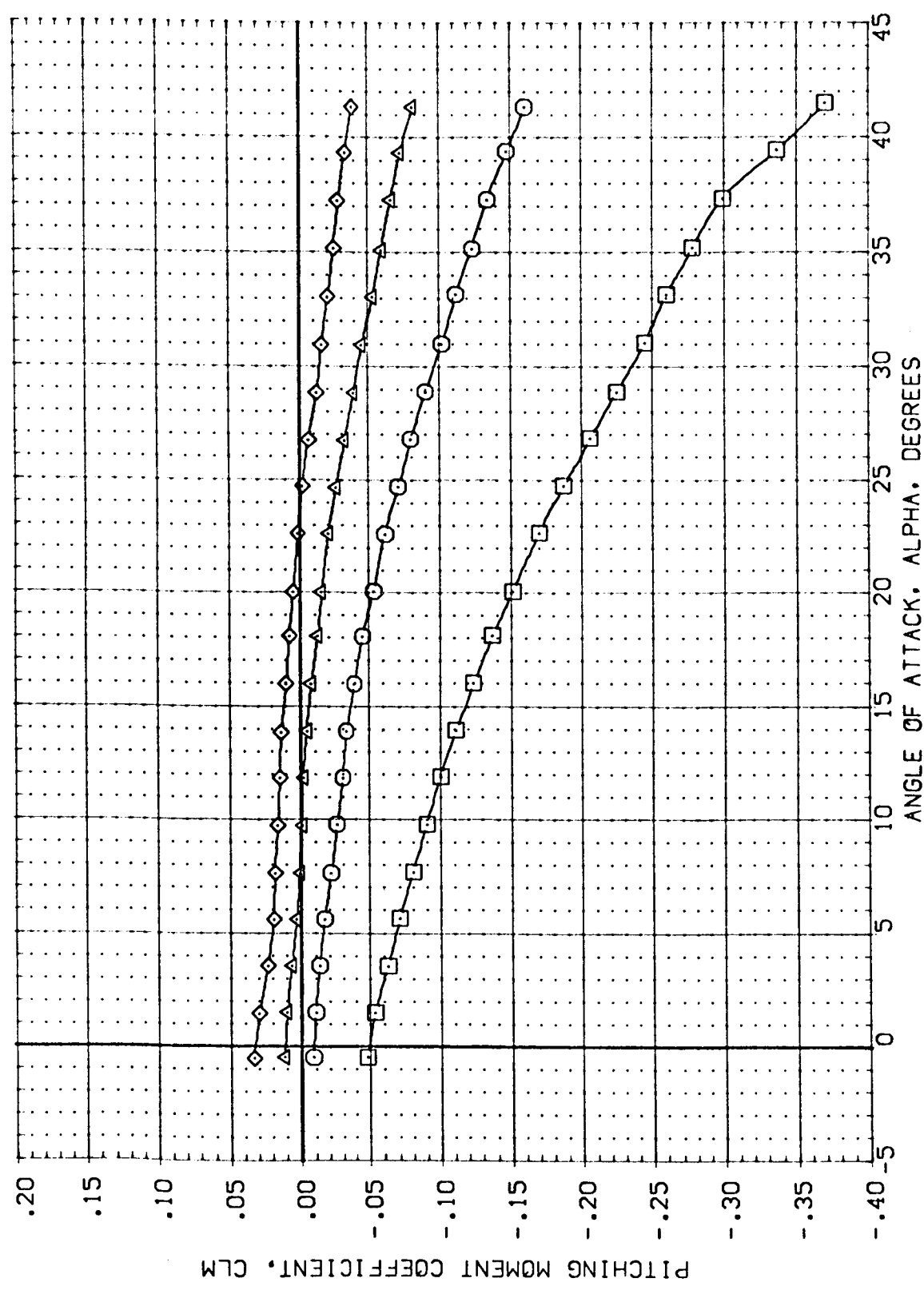


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRX	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87581)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	BREF 936.7000
(F87579)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	XVREF 838.7000
						YVREF .0000
						ZVREF .0000
						SCALE .0040

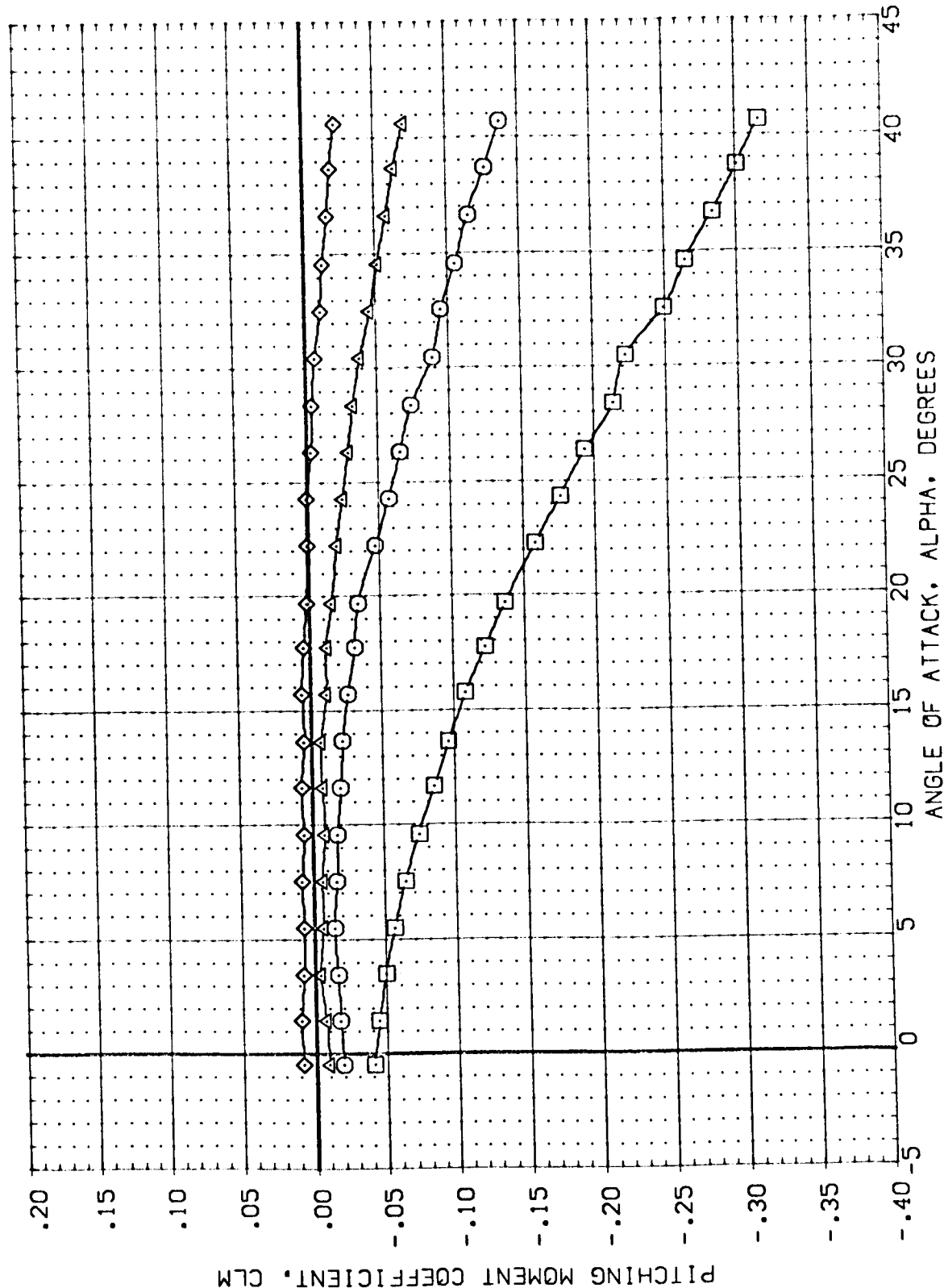


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

4-4-4-4

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	SRGF	REF	SRGF	2690.0000	50.00
(F87556)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SRGF	REF	2690.0000	50.00	IN.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	SRGF	REF	474.8000	IN.	IN.
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	SRGF	REF	938.7000	IN.	IN.
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XVRP	REF	838.7000	IN.	IN.
						VVRP	REF	.0000	IN.	IN.
						ZVRP	REF	.0000	IN.	IN.
						SCALE		.0040		

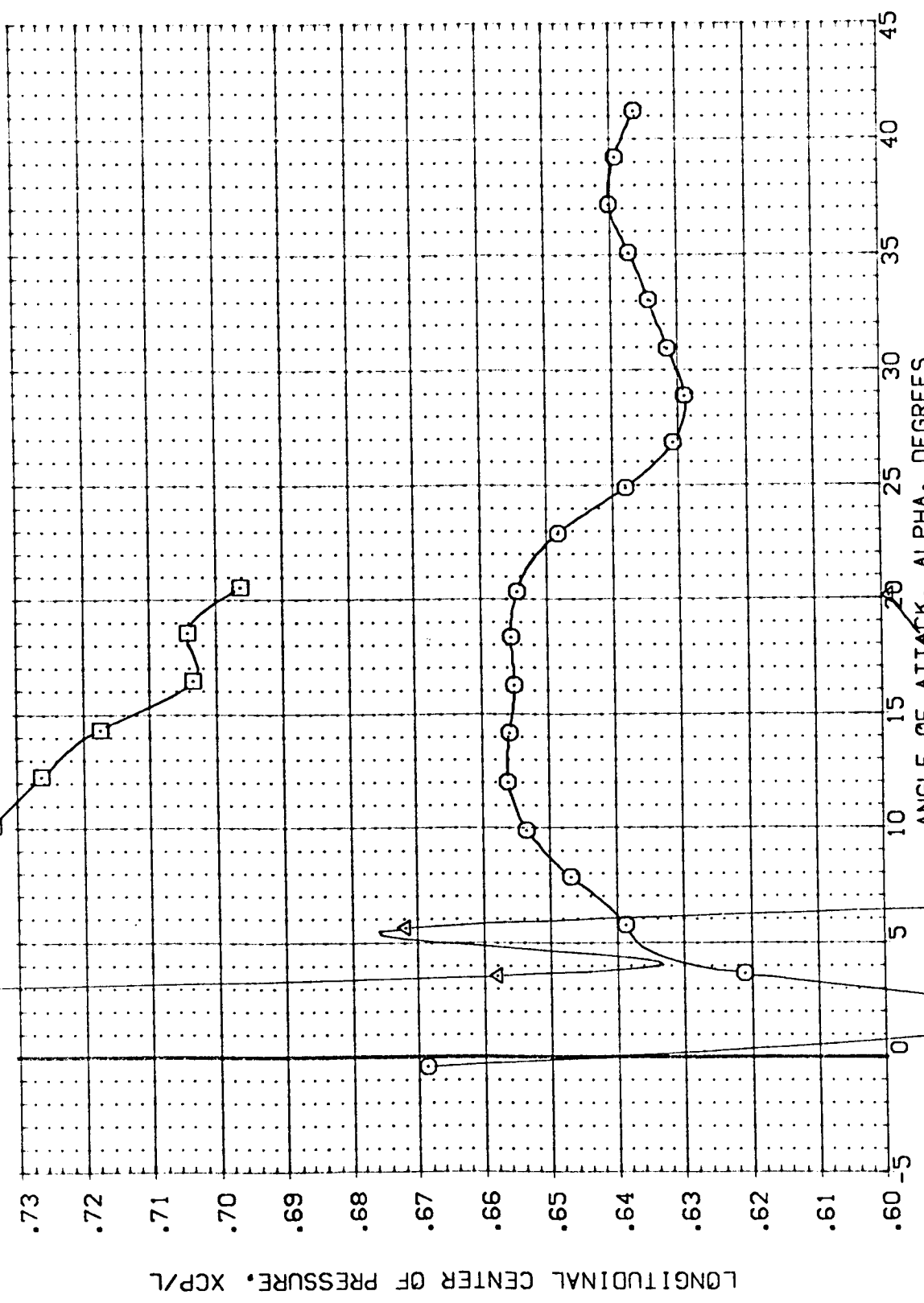


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (A) MACH = 1.58
 PAGE 8:9

DATA SET SYMBOL: (F87S56) (F87S57) (F87S58) (F87S59)

CONFIGURATION DESCRIPTION: WSC 57K(CA48) CRB 139 V/LT NOSE WSC 57K(CA48) CRB 139 V/LT NOSE WSC 57K(CA48) CRB 139 V/LT NOSE WSC 57K(CA48) CRB 139 V/LT NOSE

BETA: .000 .000 .000 .000

ELEVTR: .000 .000 .000 .000

SPDBRK: 999.990 999.990 999.990 999.990

BOE LAR: .000 .000 .000 .000

REFERENCE INFORMATION: SQ. FT. 2690.0000 404.8000 936.7000 838.0000

SCALE: .0000 .0000 .0000 .0000

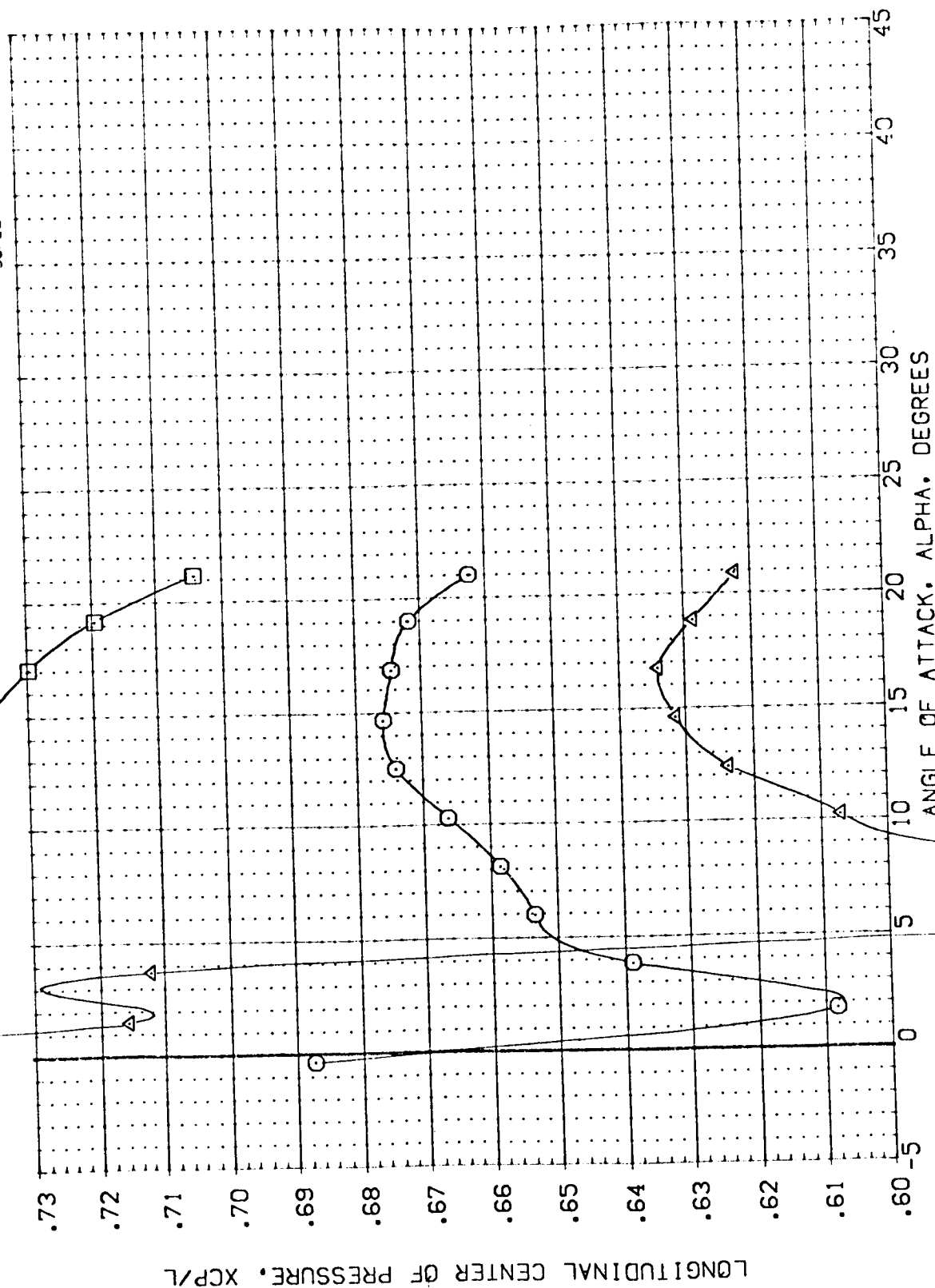


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(3) MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION

[F87S66] MSC 574(CA48) ORB 139 W/ALT NCSE

[F87S77] MSC 574(CA48) ORB 139 W/ALT NCSE

[F87S81] DATA NOT AVAILABLE

[F87S19] MSC 574(CA48) ORB 139 W/ALT NCSE

BETA

ELEVTR

SPDRBK

BOFLAP

REFERENCE INFORMATION

SREF 2690.0000 50.0°

REF 474.8000

BREF 956.7000

XVRB 839.7000

VVRB .0000

ZVRB .0000

SCALE .0010

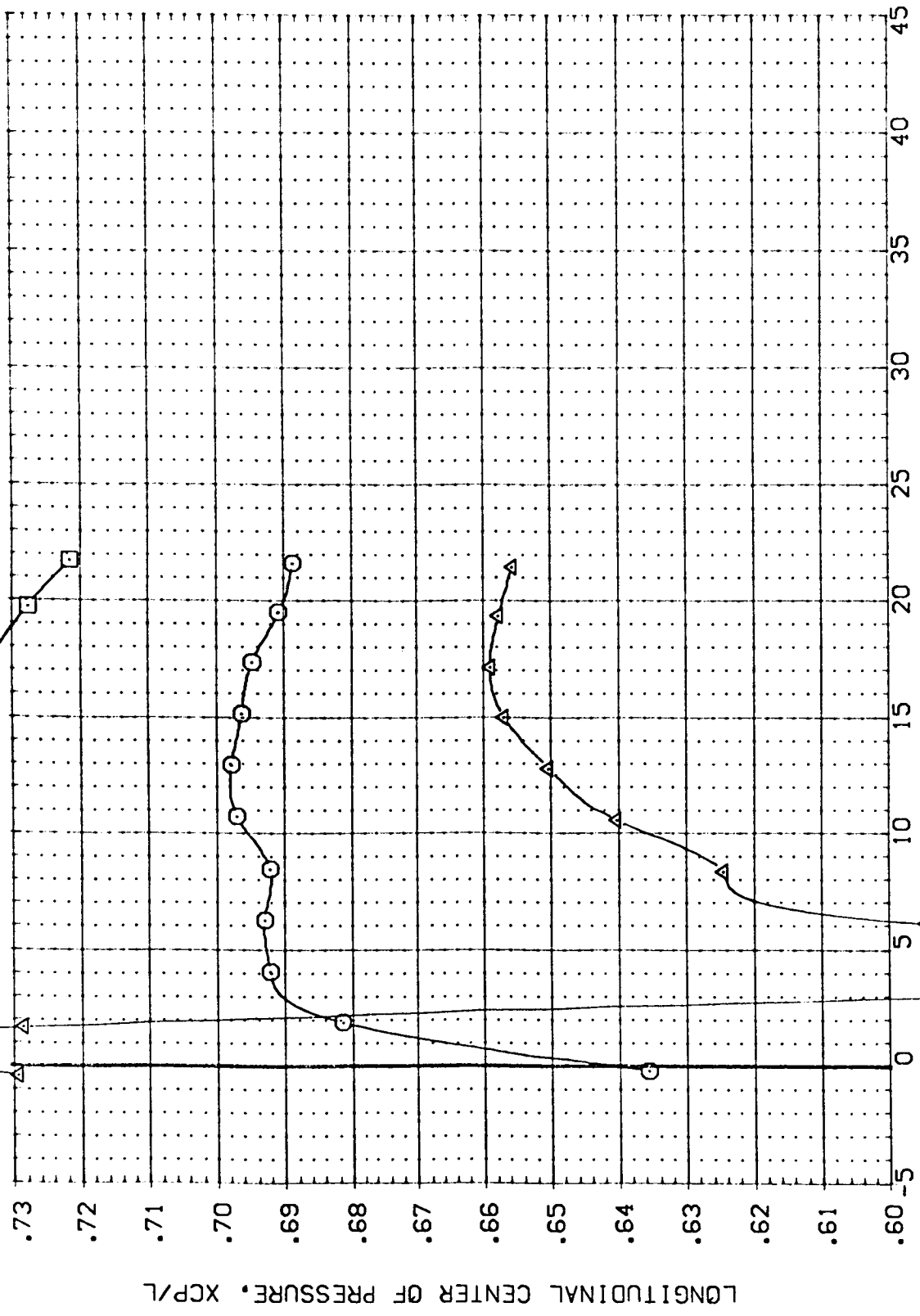


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOELAP	REFERENCE INFORMATION
(F87S66)	WSEC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	WSEC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.0000
(F87S81)	WSEC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.0000
(F87S79)	WSEC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.0000
						YREF .0000
						ZREF .0000
						SCALE .0040

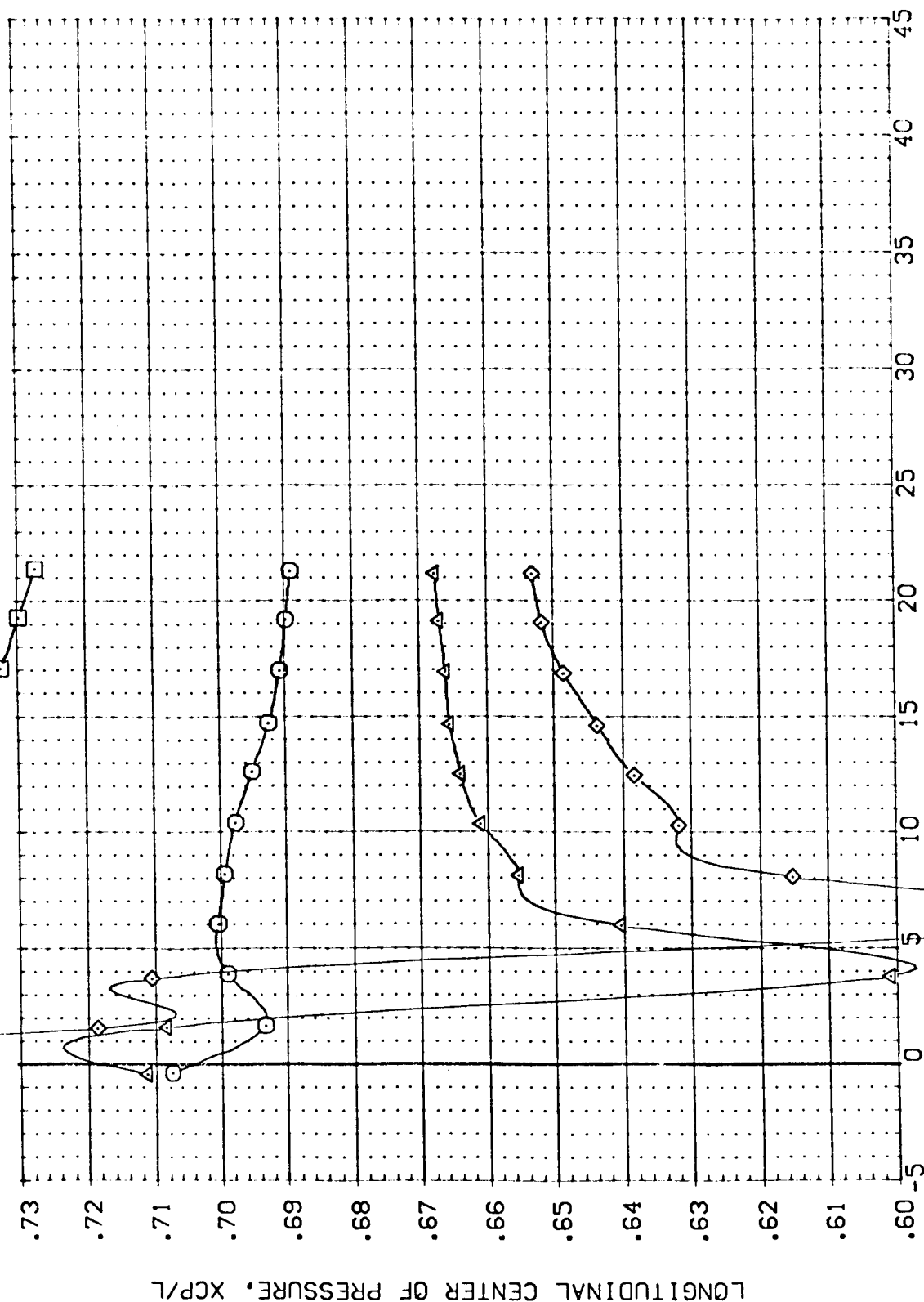


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2600.0000 SQ.FT.
(F87567)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	.000	LREF 474.8000 IN.
(F87568)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87569)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
						ZMRP .0000
						SCALE .0040

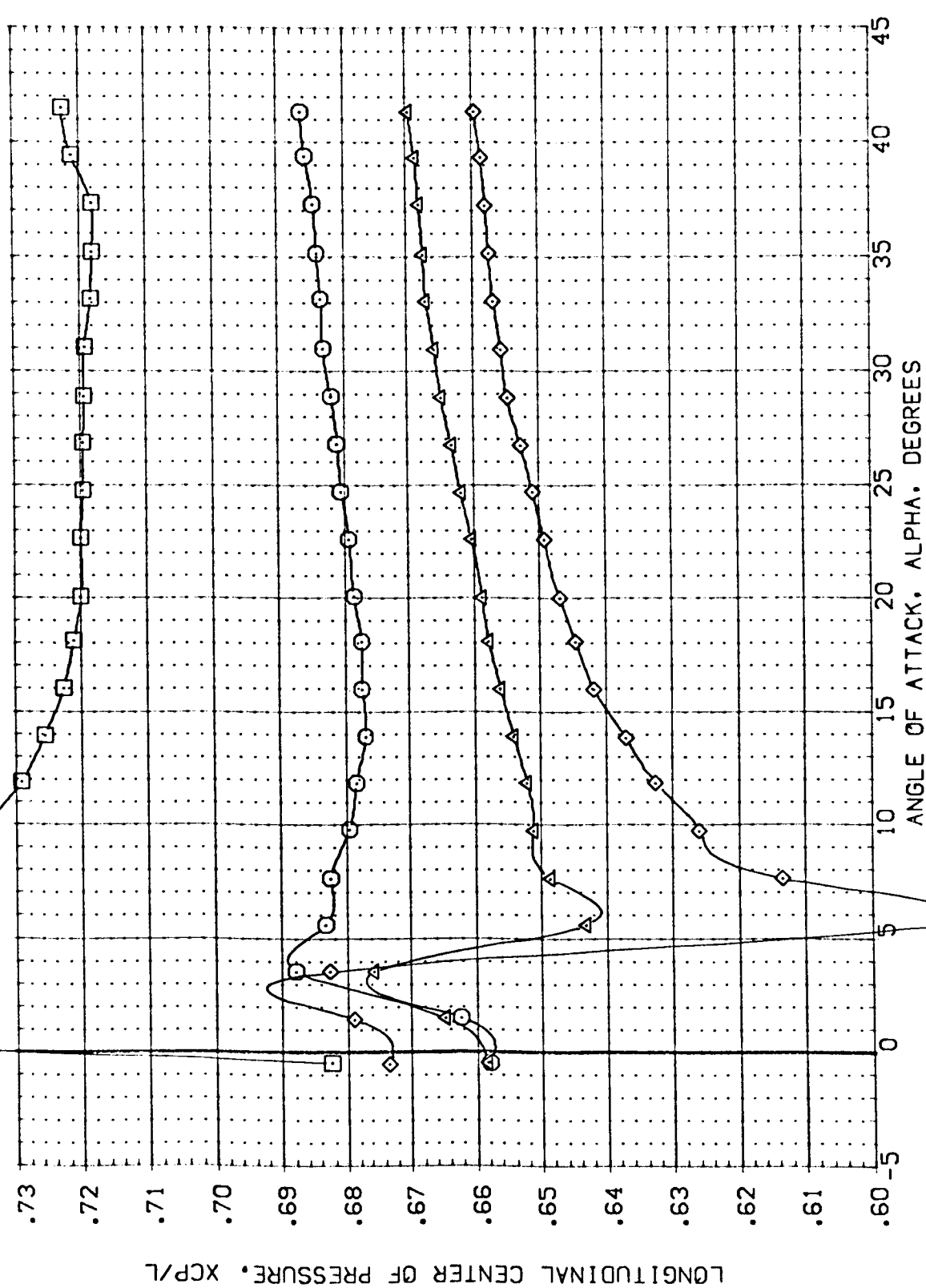


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

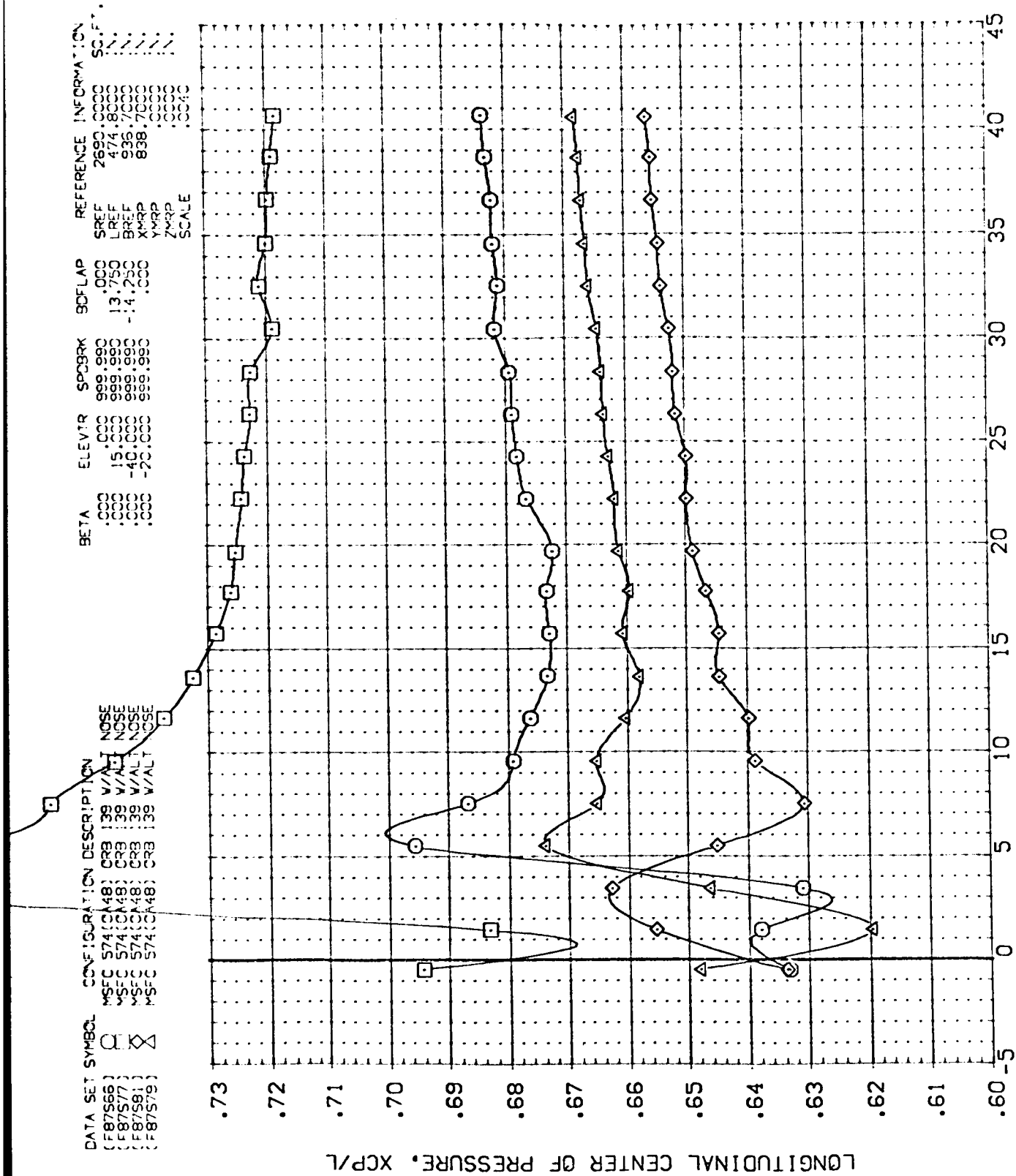


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F8/S66) MSFC 5/4(CA48) CR3 139 W/ALT NOSE
 (F8/S77) MSFC 5/4(CA48) CR3 139 W/ALT NOSE
 (F8/S81) DATA NOT AVAILABLE
 (F8/S79) MSFC 5/4(CA48) CR3 139 W/ALT NOSE

BETA ELEVTR SPCBRK BDCLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SRFF 7690.0000 SC.FT.
 .000 15.000 999.990 .000 LREF 474.8000
 .000 -40.000 999.990 .000 BREF 935.7000
 .000 -20.000 999.990 .000 XREF 835.7000
 .000 .000 .000 .000 VREF
 .000 .000 .000 .000 ZREF
 .000 .000 .000 .000 SCALE

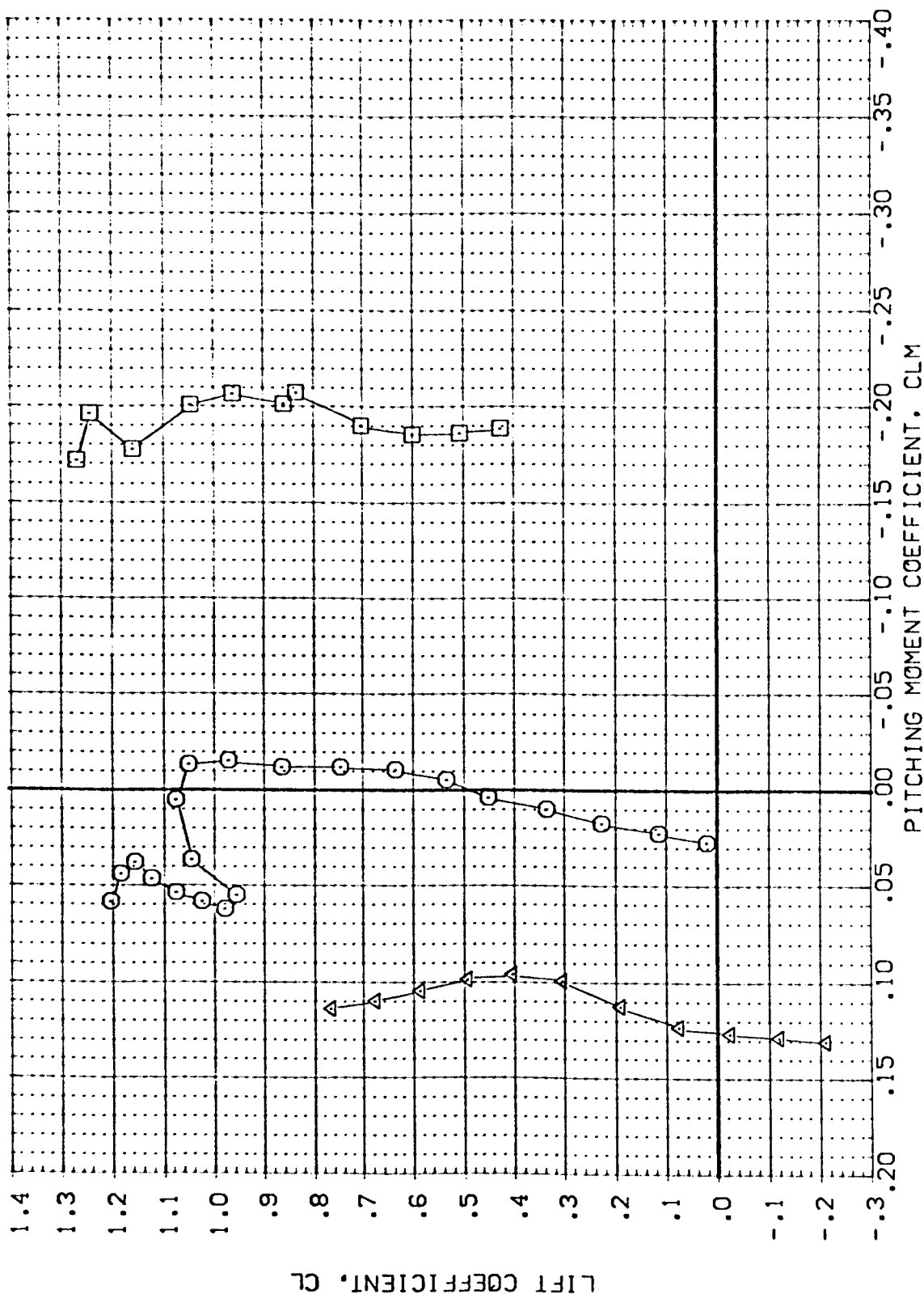


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SCALE
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87588)	DATA NOT AVAILABLE	.000	.000	999.990	.000	BREF 836.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

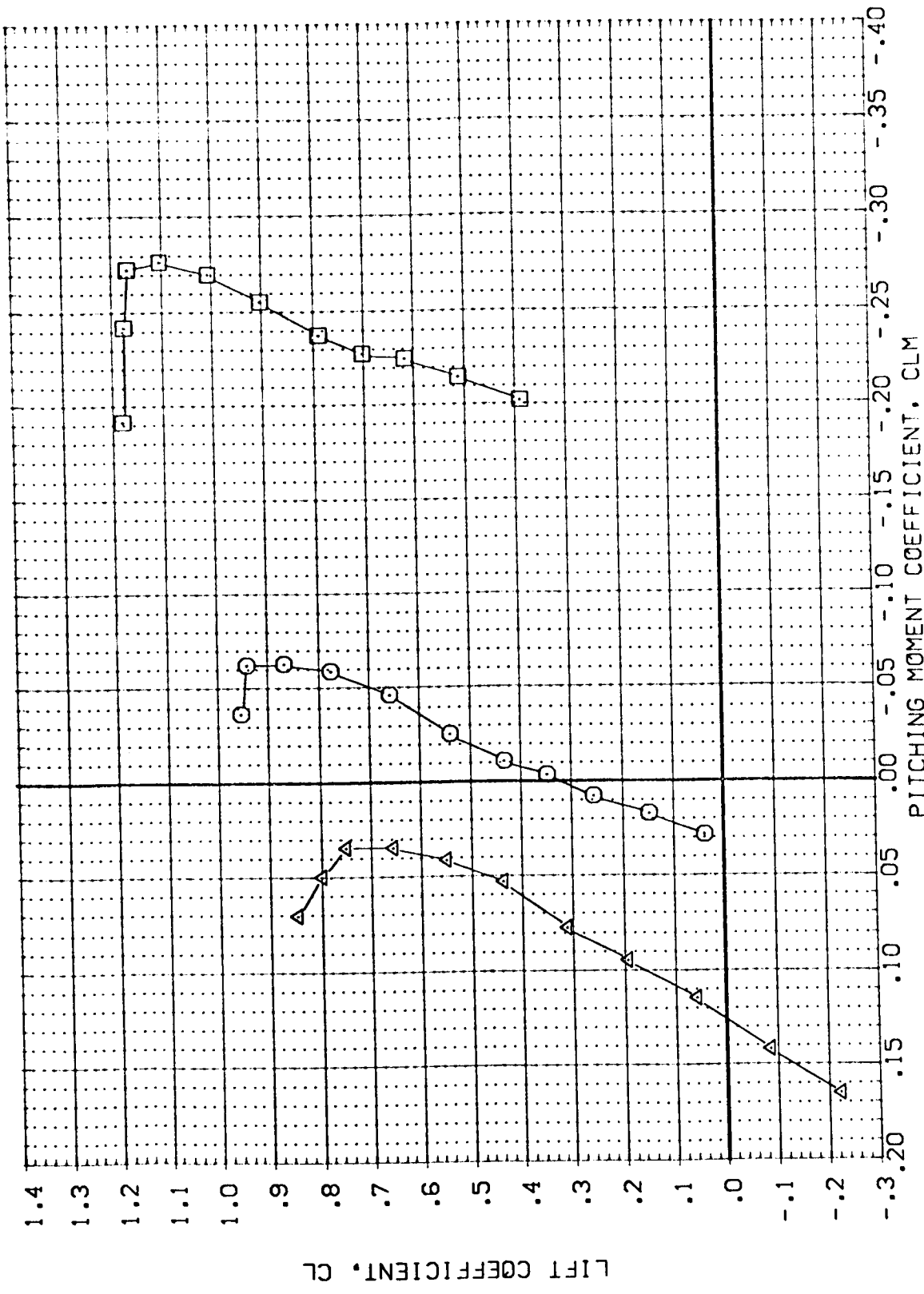


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(B)MACH = .90

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	2690.0000
(F87S67)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	474.8000
(F87S68)	DATA NOT AVAILABLE	.000	15.000	999.990	13.750	936.7000
(F87S69)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	838.7000
(F87S70)		.000	-20.000	999.990	.000	.0000
					Zvdp	.0000
					SCALE	.0040

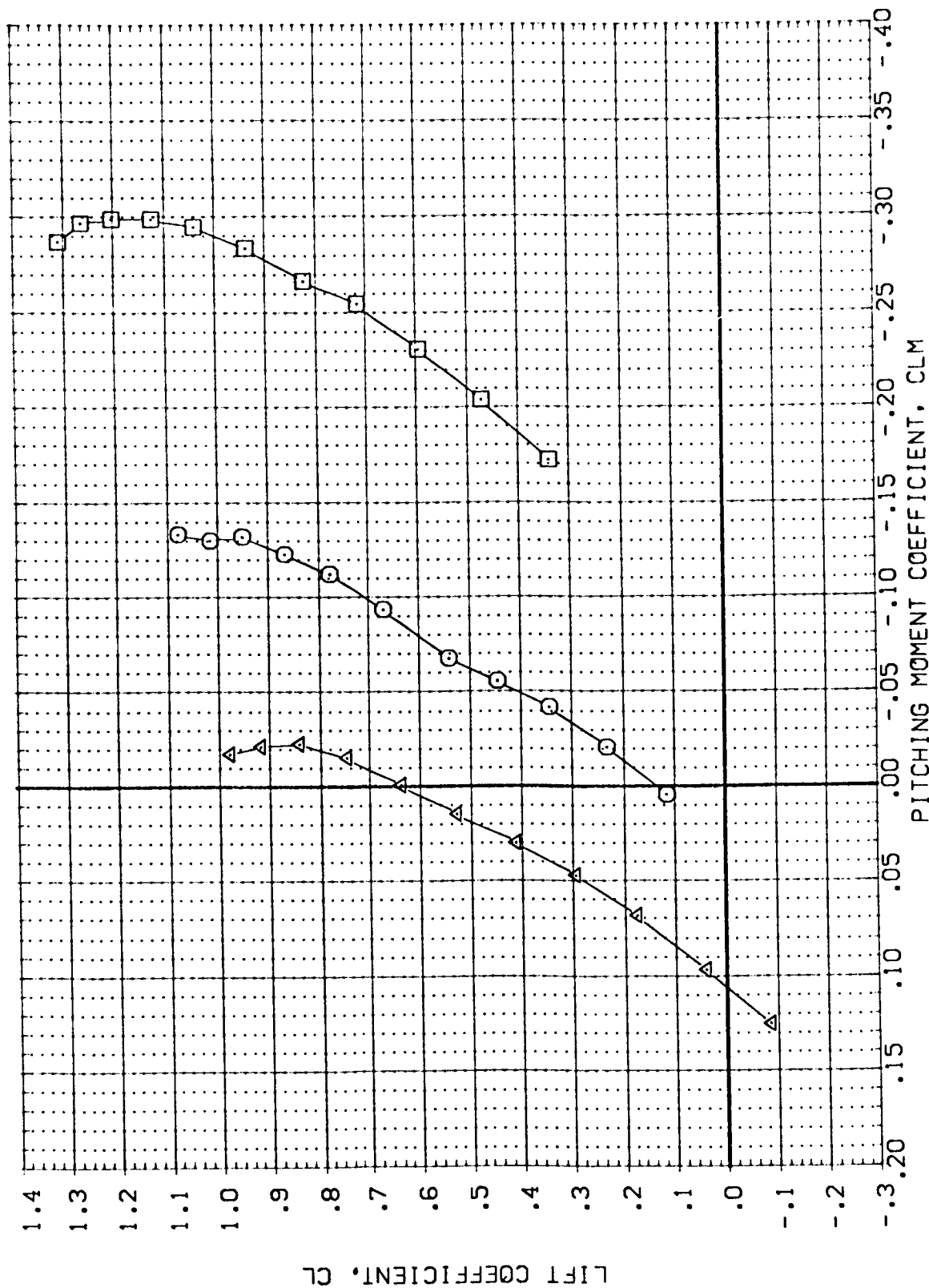


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = 1.20
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0000

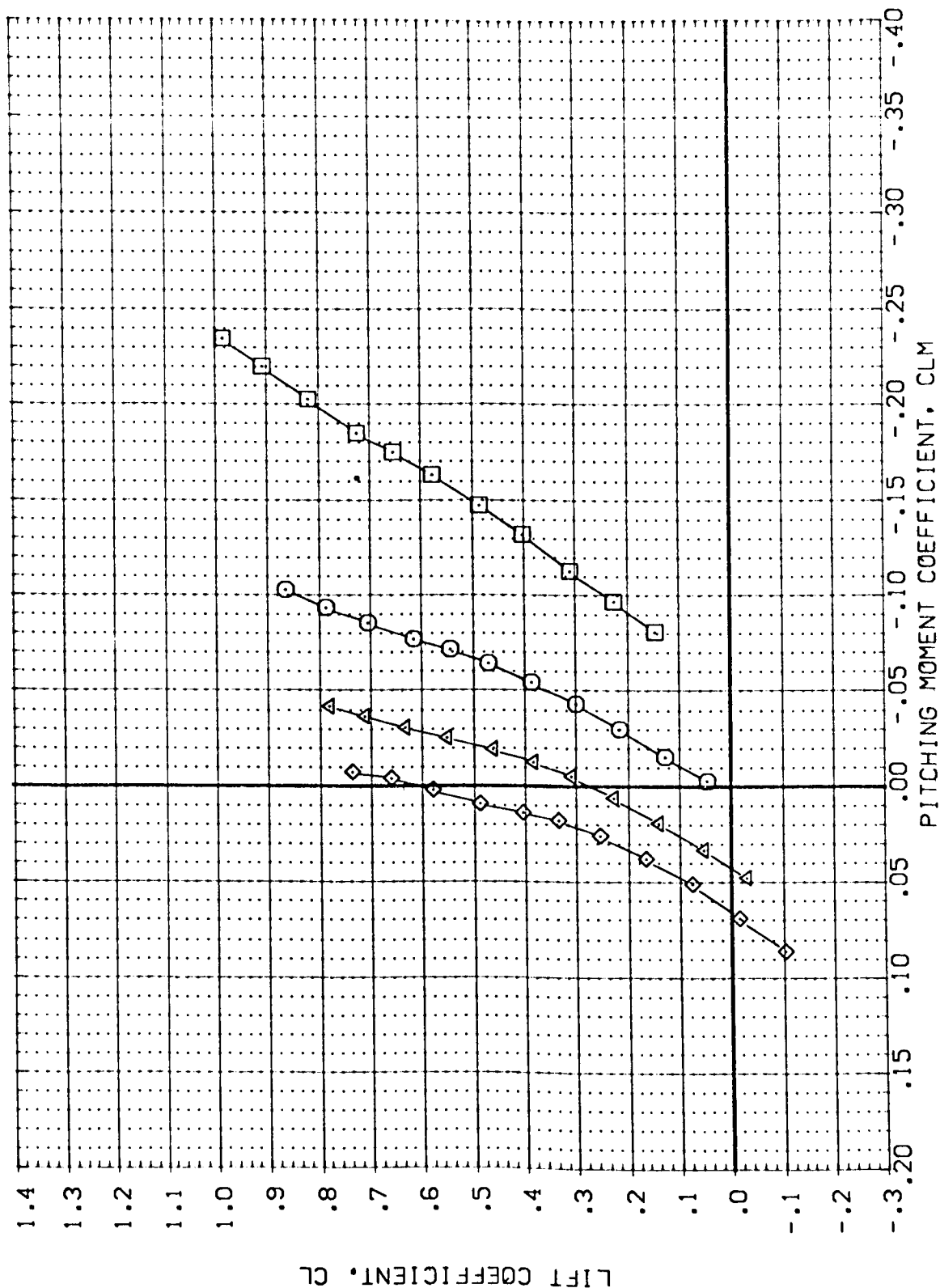


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C) VACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPO3RK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CR3 39 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(CA48) CR3 39 W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87581)	MSFC 574(CA48) CR3 39 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87579)	MSFC 574(CA48) CR3 39 W/ALT NCSE	.000	-20.000	999.990	.000	XVREF 838.7000 IN.
						YVREF .0000
						ZVREF .0000
						SCALE .0040

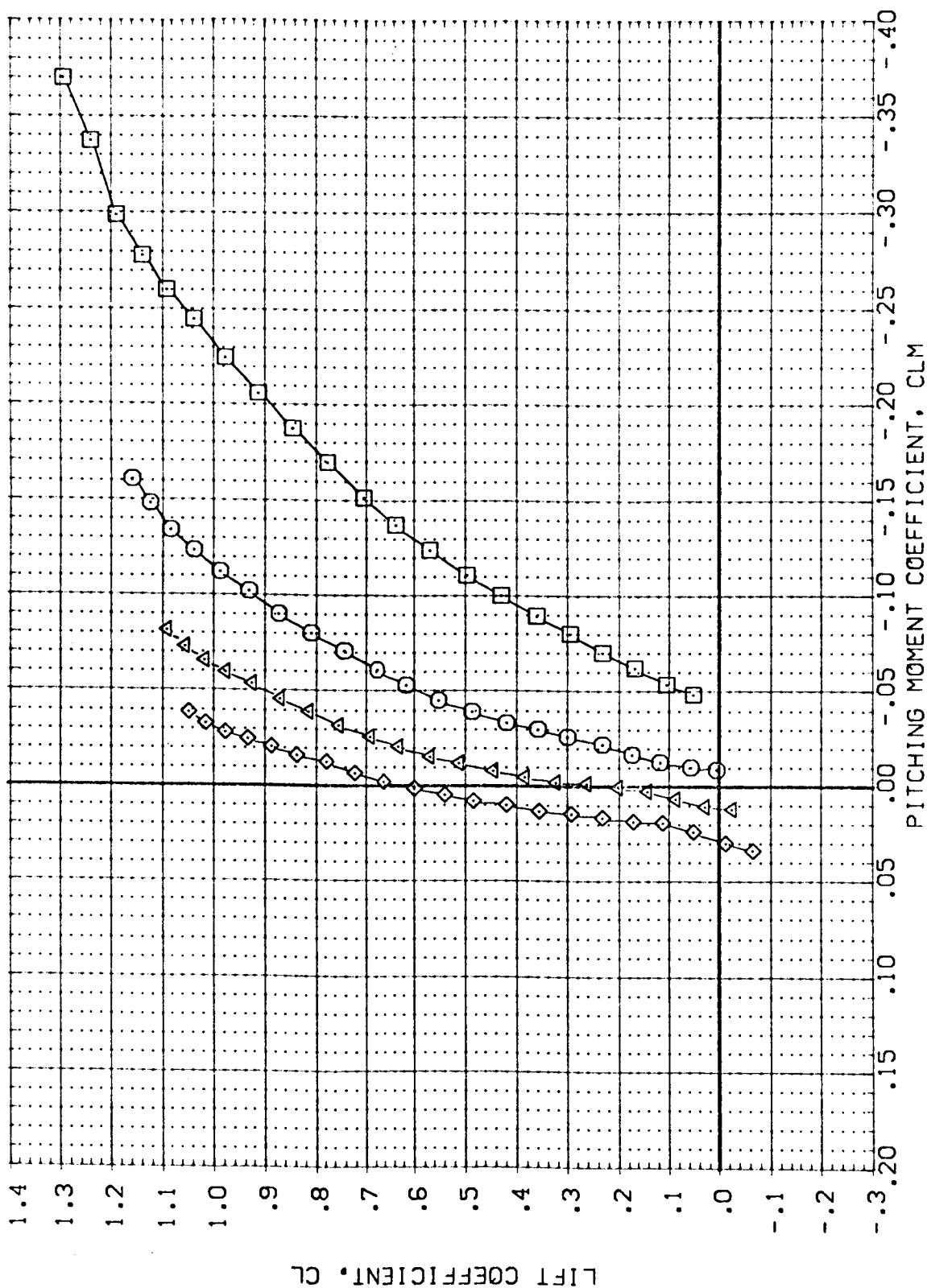


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87S65)	MSFC 574(CA48) CR3 139 V/ALT NOISE	.000	.000	999.999	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) CR3 139 V/ALT NOISE	.000	15.000	999.999	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) CR3 139 V/ALT NOISE	.000	-10.000	999.999	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) CR3 139 V/ALT NOISE	.000	-20.000	999.999	.000	XMRP 838.7000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

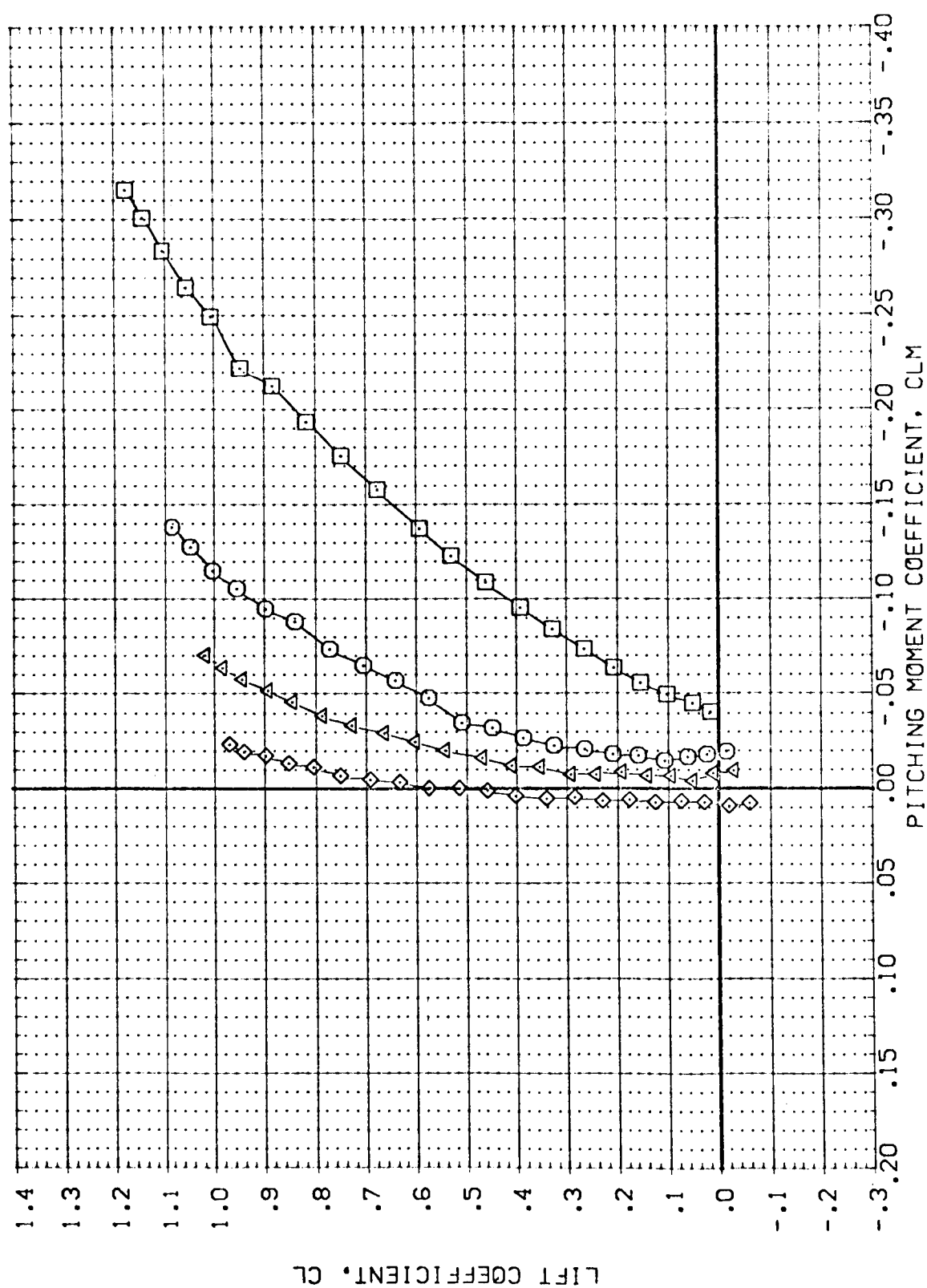


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOISE
 (F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NCSE	.000	.000	999.990	.000	SPREF 2690.0000 SC.F.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NCSE	.000	15.000	999.990	13.750	LPREF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BPREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NCSE	.000	-20.000	999.990	.000	XVREF 838.7000
						YVREF .0000
						ZVREF .0000
						SCALE .0040

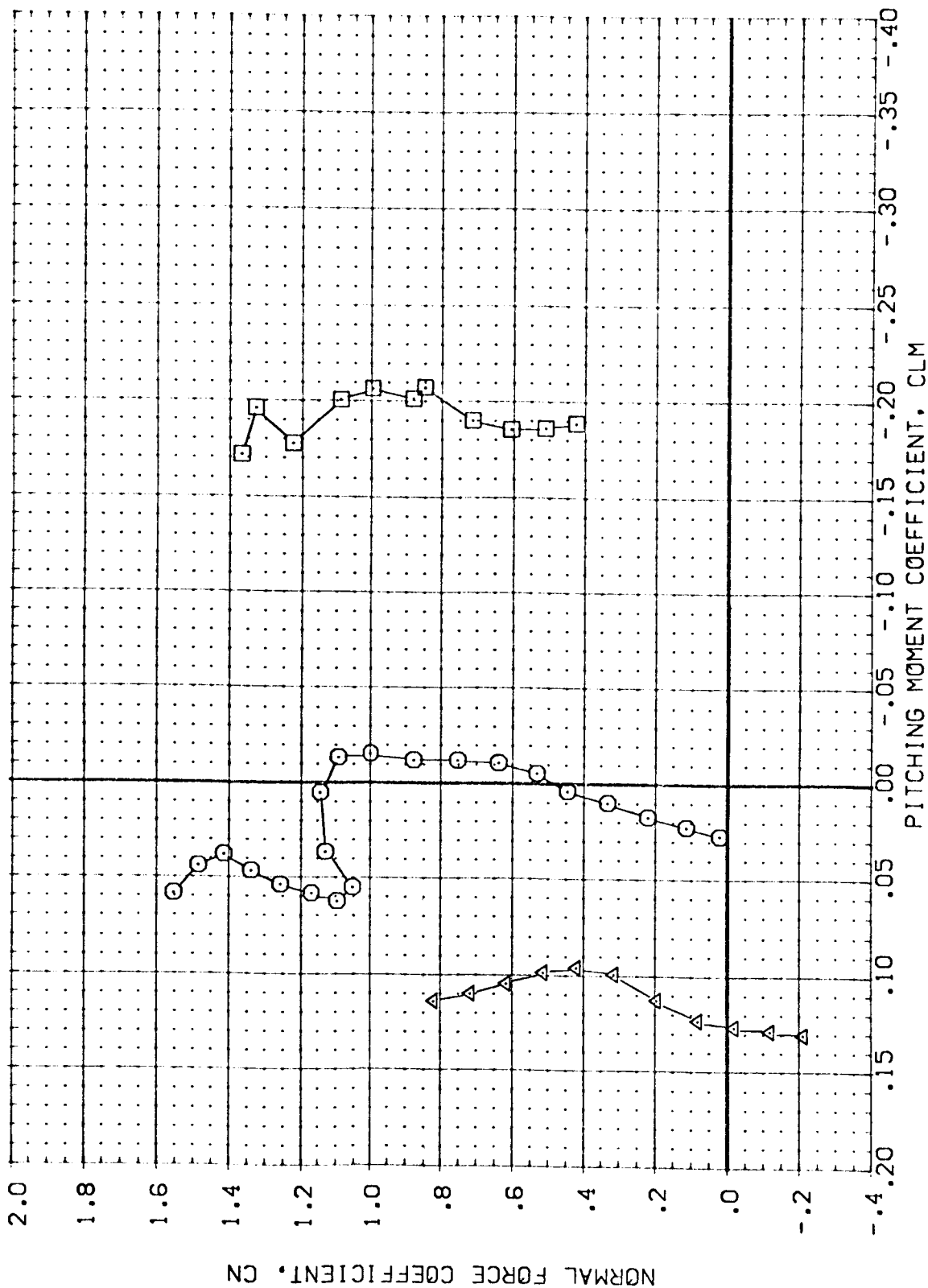


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SRFF 2690.0000
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	13.750	LRFF 474.8000
(F87581)	DATA NO. 1 AVAL LAB E	.000	.000	999.990	-14.250	BRFF 938.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XWRD 838.7000
						ZWRD .0000
						SCALE .0040

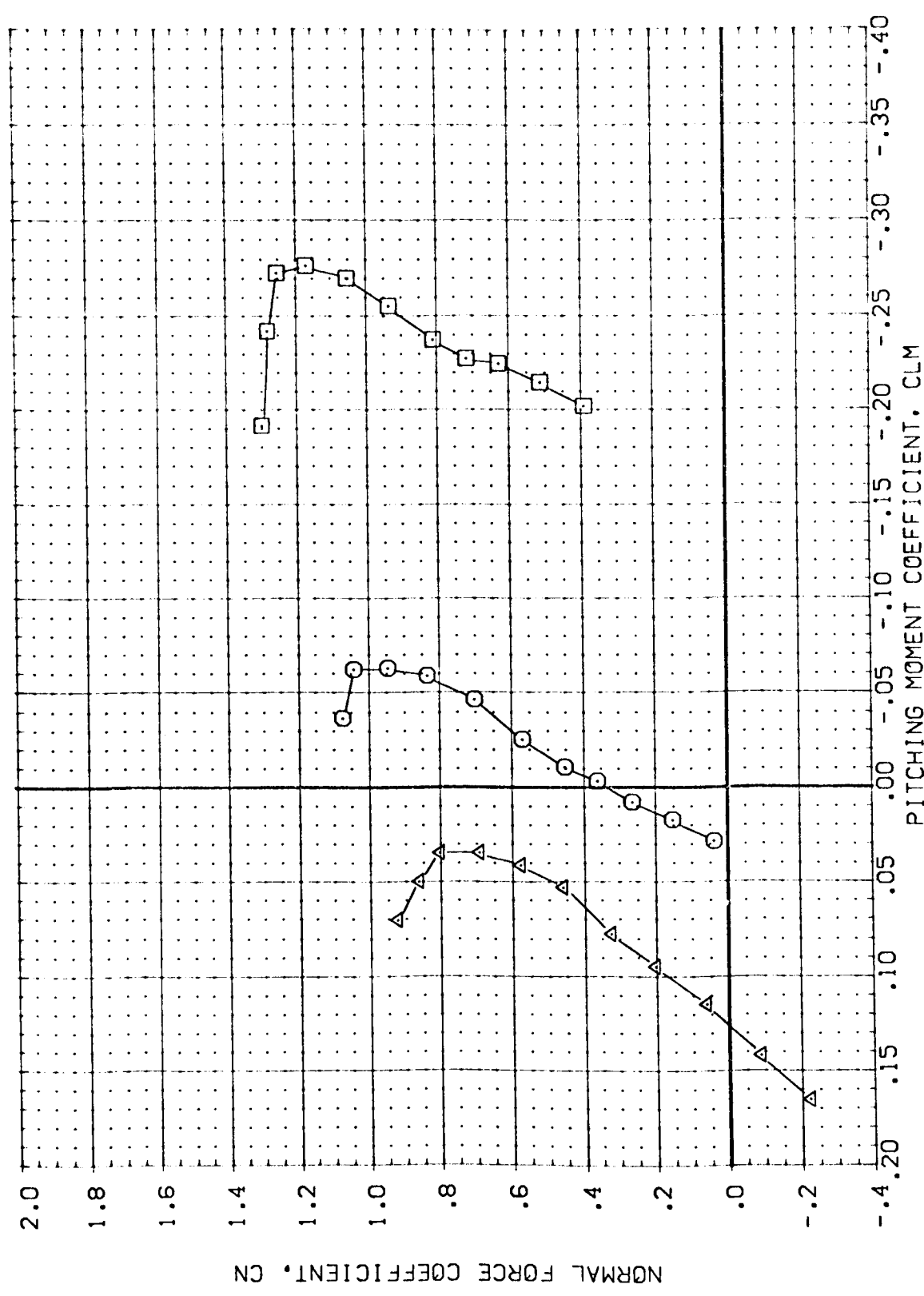


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(B)MACH = .90

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87S86)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S87)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	LREF 474.8000
(F87S88)	DATA NOT AVAILABLE	.000	.000	999.990	.000	BREF 936.0000
(F87S89)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	XVRP 838.0000
						YVRP .0000
						ZVRP .0000
						SCALE .0040

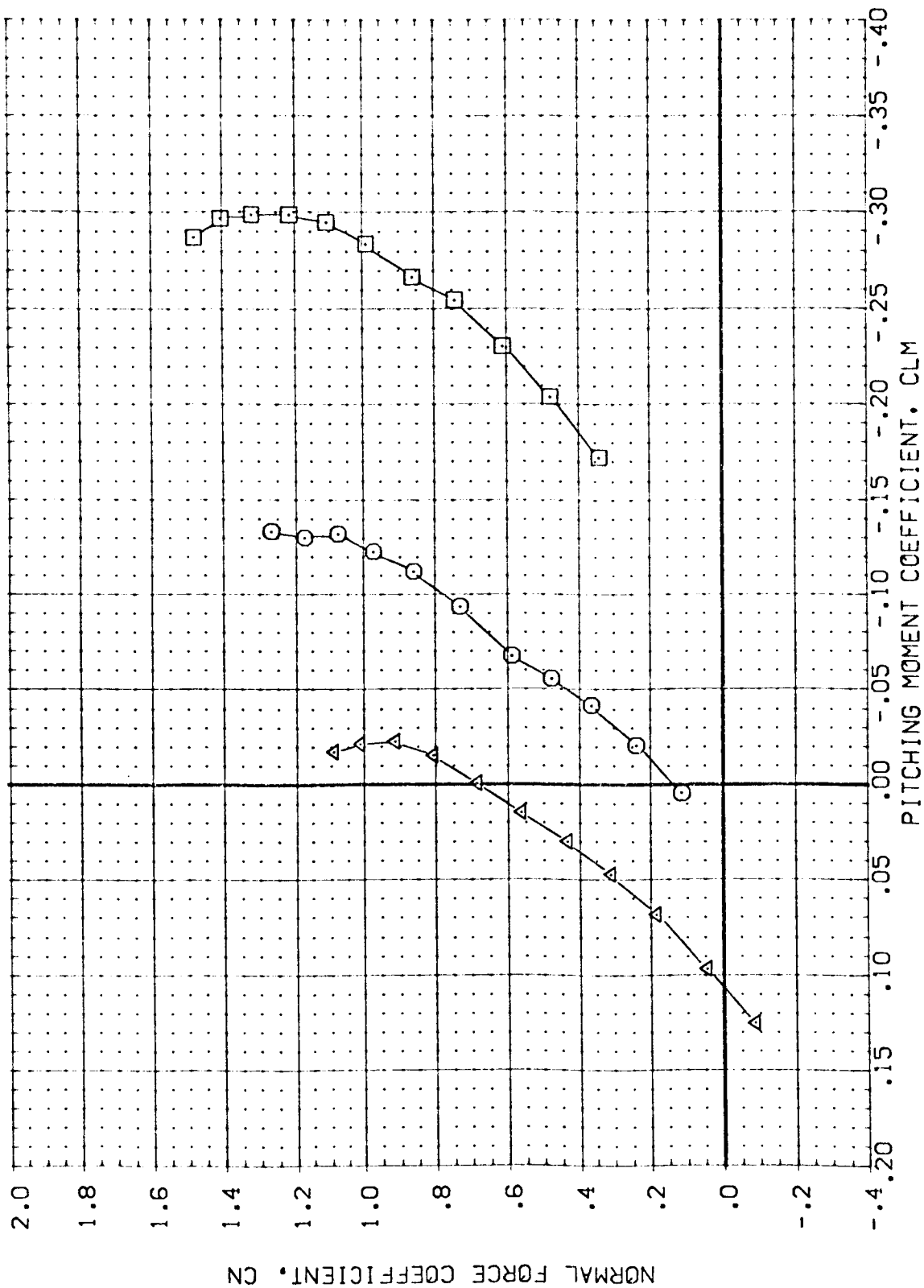


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMB.	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87S66)	WSFC 574(CA48) CRB 39 W/ALT NOSE	.000	.000	999.990	.000	SREF 2900.0000
(F87S77)	WSFC 574(CA48) CRB 39 W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000
(F87S81)	WSFC 574(CA48) CRB 39 W/ALT NOSE	.000	40.000	999.990	-14.200	BREF 936.7000
(F87S79)	WSFC 574(CA48) CRB 39 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
						WREF 936.7000
						ZREF 936.7000
						SCALE .0340

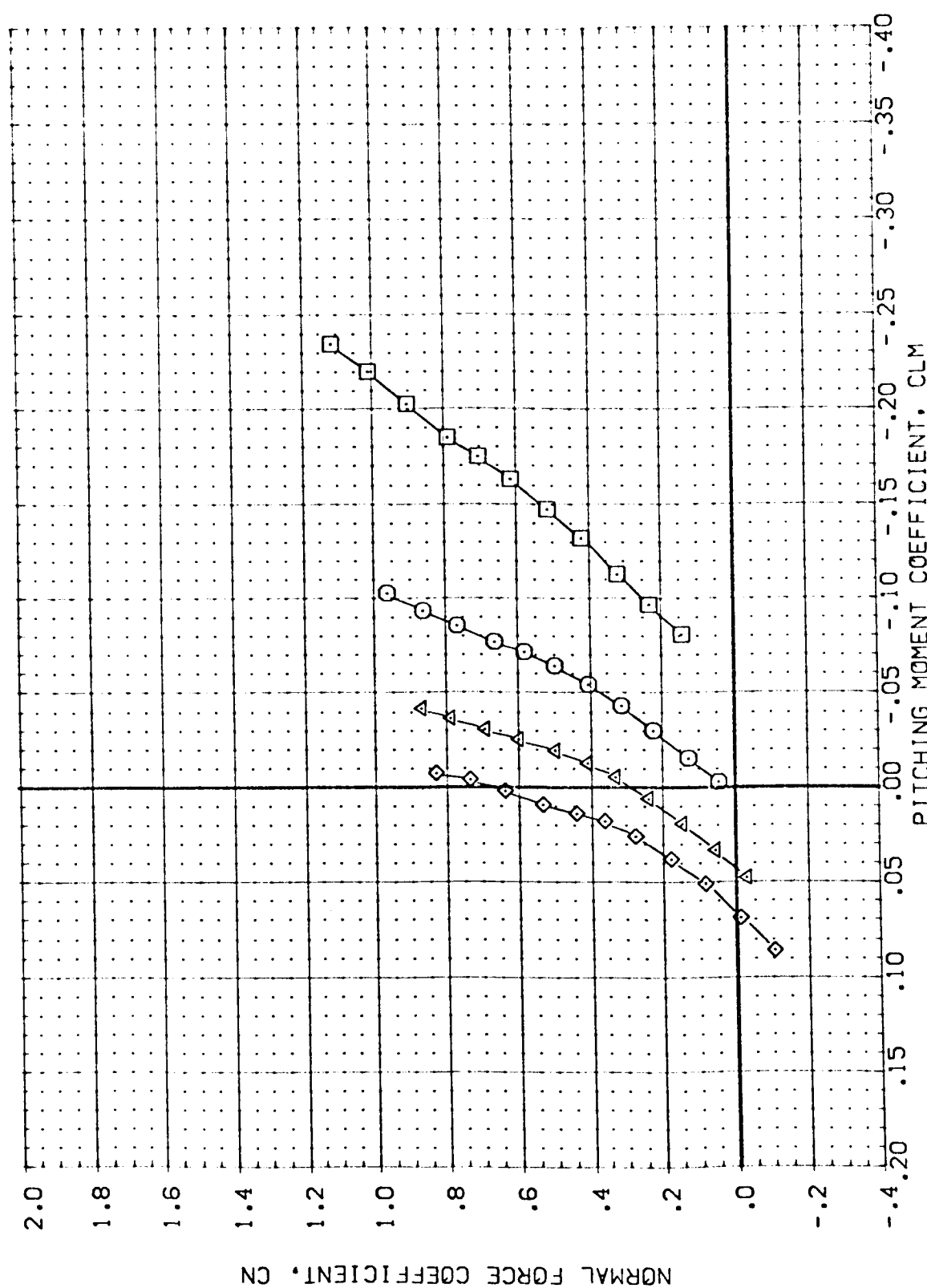
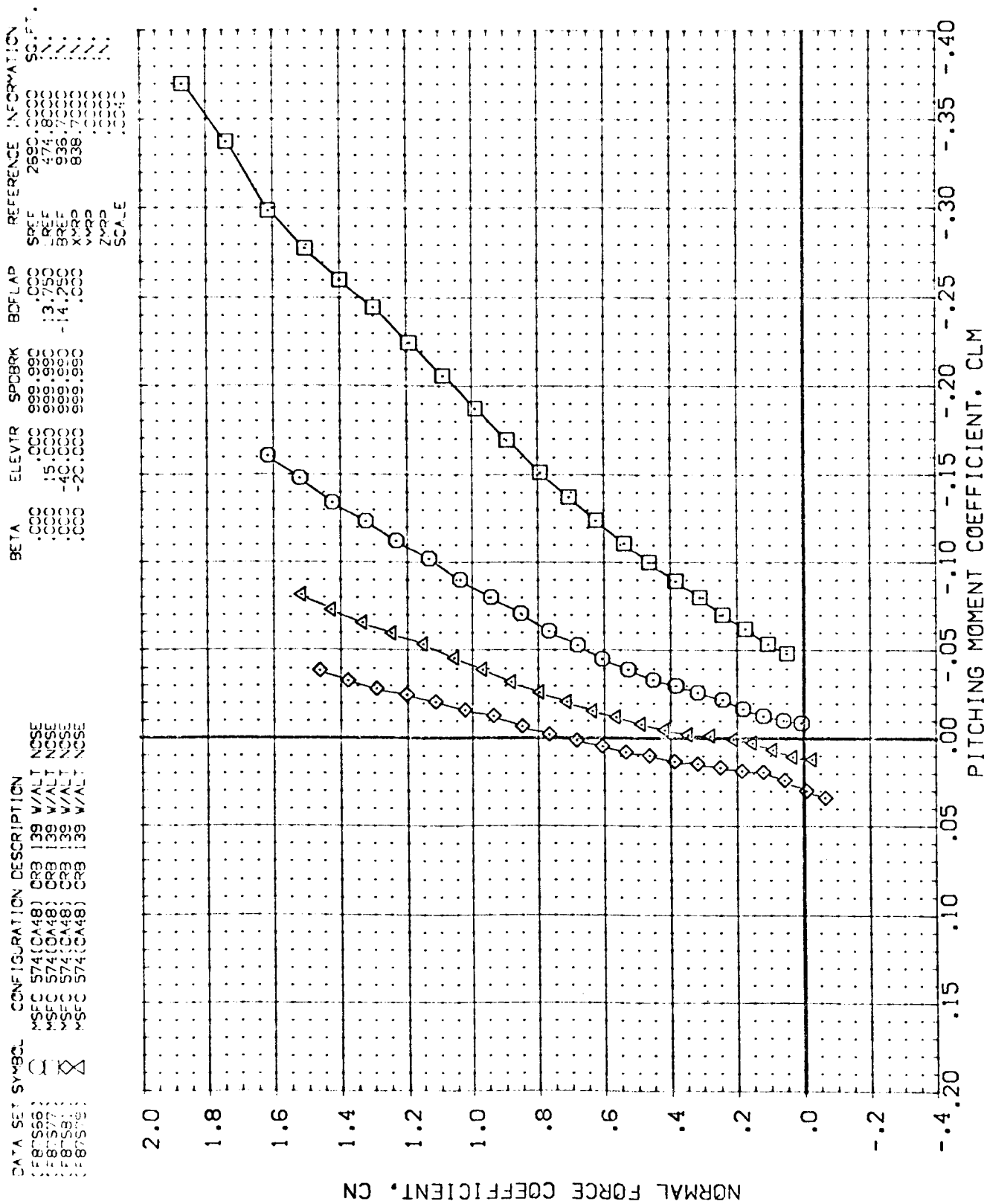


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MAC = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOGRK	BOFLAP	REFERENCE INFORMATION
MSFC 574(CA48)	CR3 139 W/ALT NOSE	.000	.000	999.999	.000	SRCE 2690.0000 SCUTT.
MSFC 574(CA48)	CR3 139 W/ALT NOSE	.000	.000	999.999	13.750	LRCE 474.8000
MSFC 574(CA48)	CR3 139 W/ALT NOSE	.000	15.000	999.999	-14.250	BRCE 936.7000
MSFC 574(CA48)	CR3 139 W/ALT NOSE	.000	-40.000	999.999	.000	XRCE 838.7000
MSFC 574(CA48)	CR3 139 W/ALT NOSE	.000	-20.000	999.999	.000	YMRP 10000.0000
						ZMRP 10000.0000
						SCALE 10010

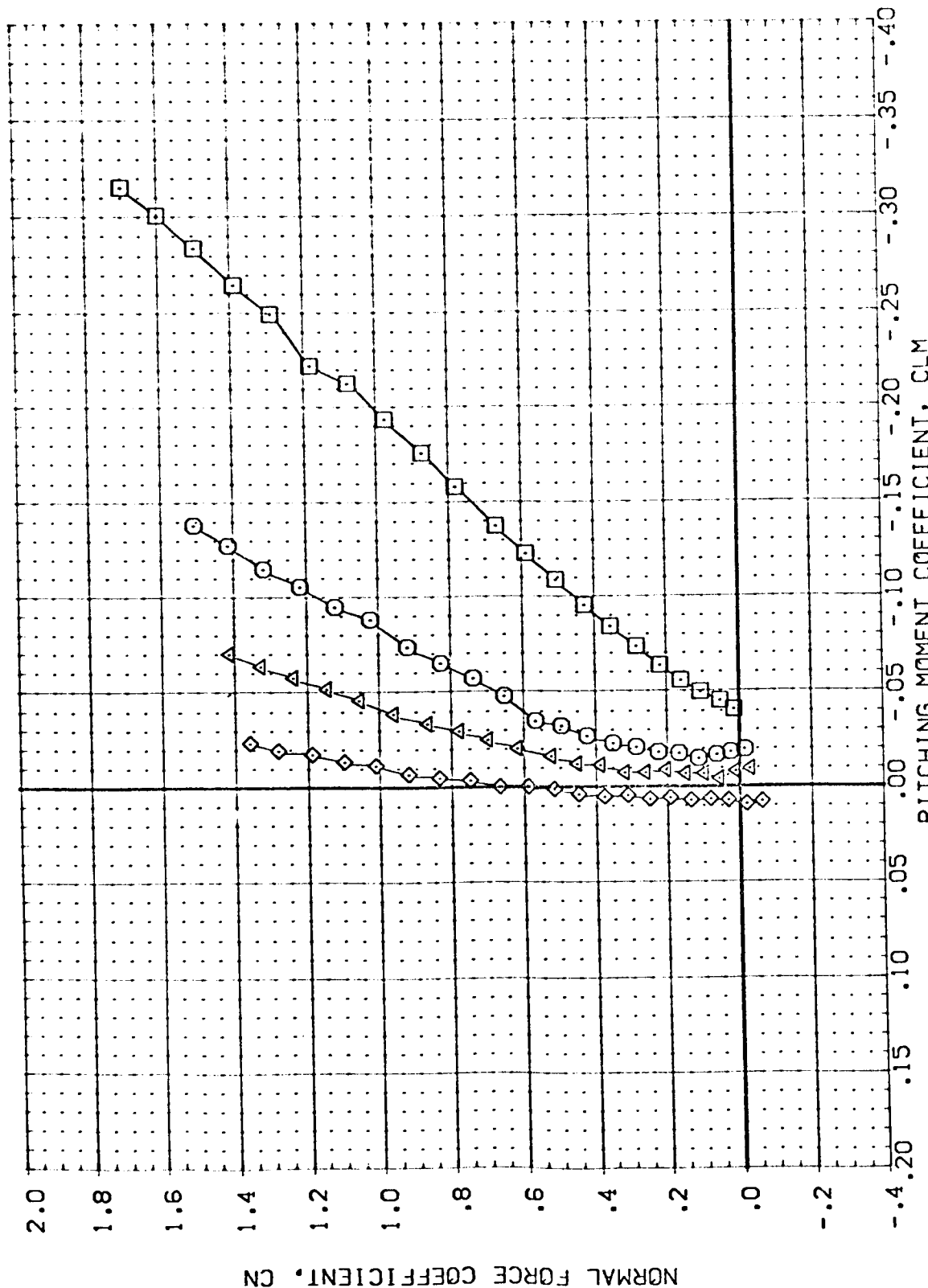


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
(F)MACH = 4.96 PAGE 836

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBK	BDELAP	REFERENCE INFORMATION
(X87566)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SCALF.
(F87577)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0040

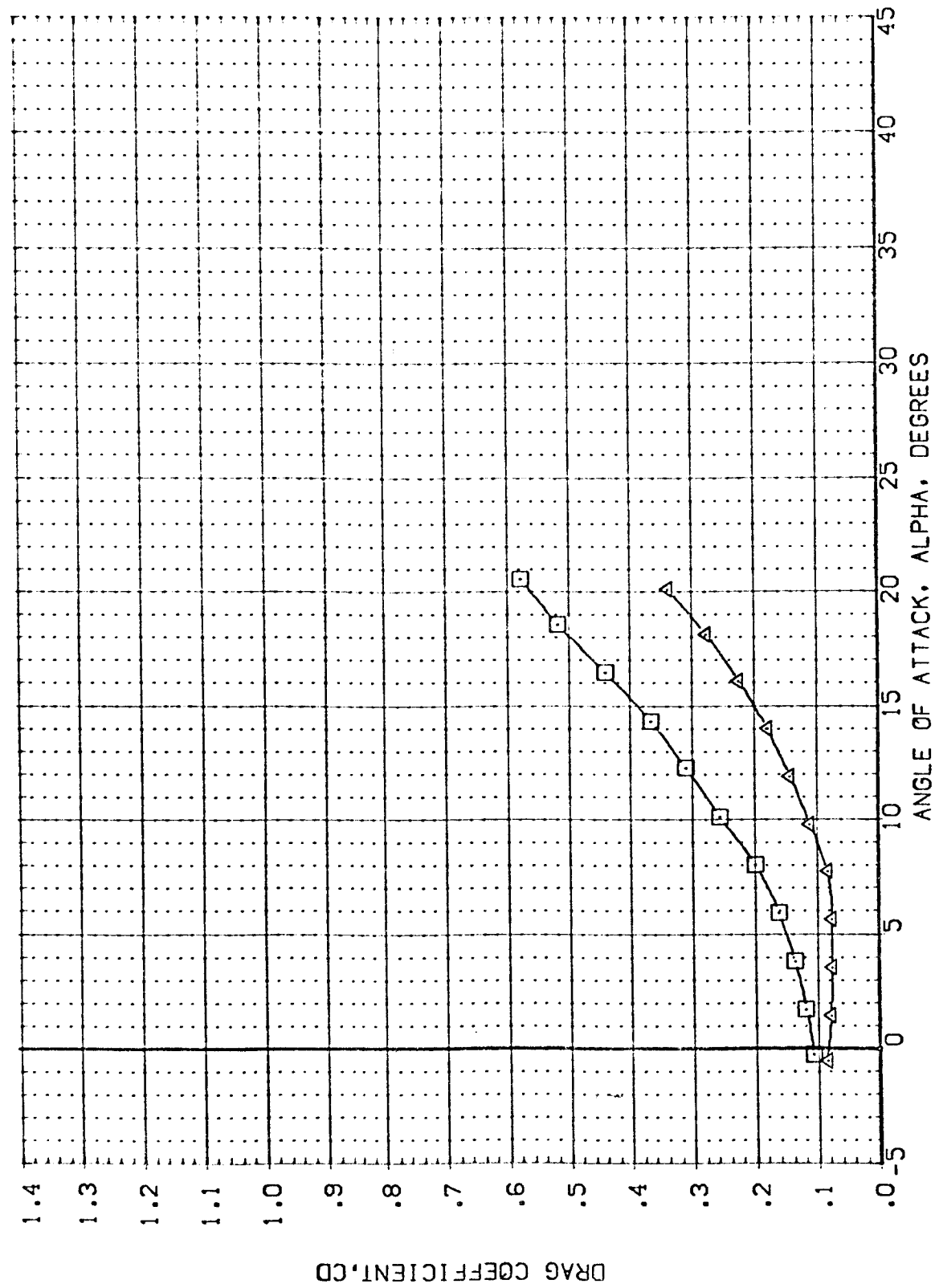


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
{XB7566}	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SQ.F.T.
{F87577}	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
{F87581}	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
{F87579}	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
					.000	YMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0010

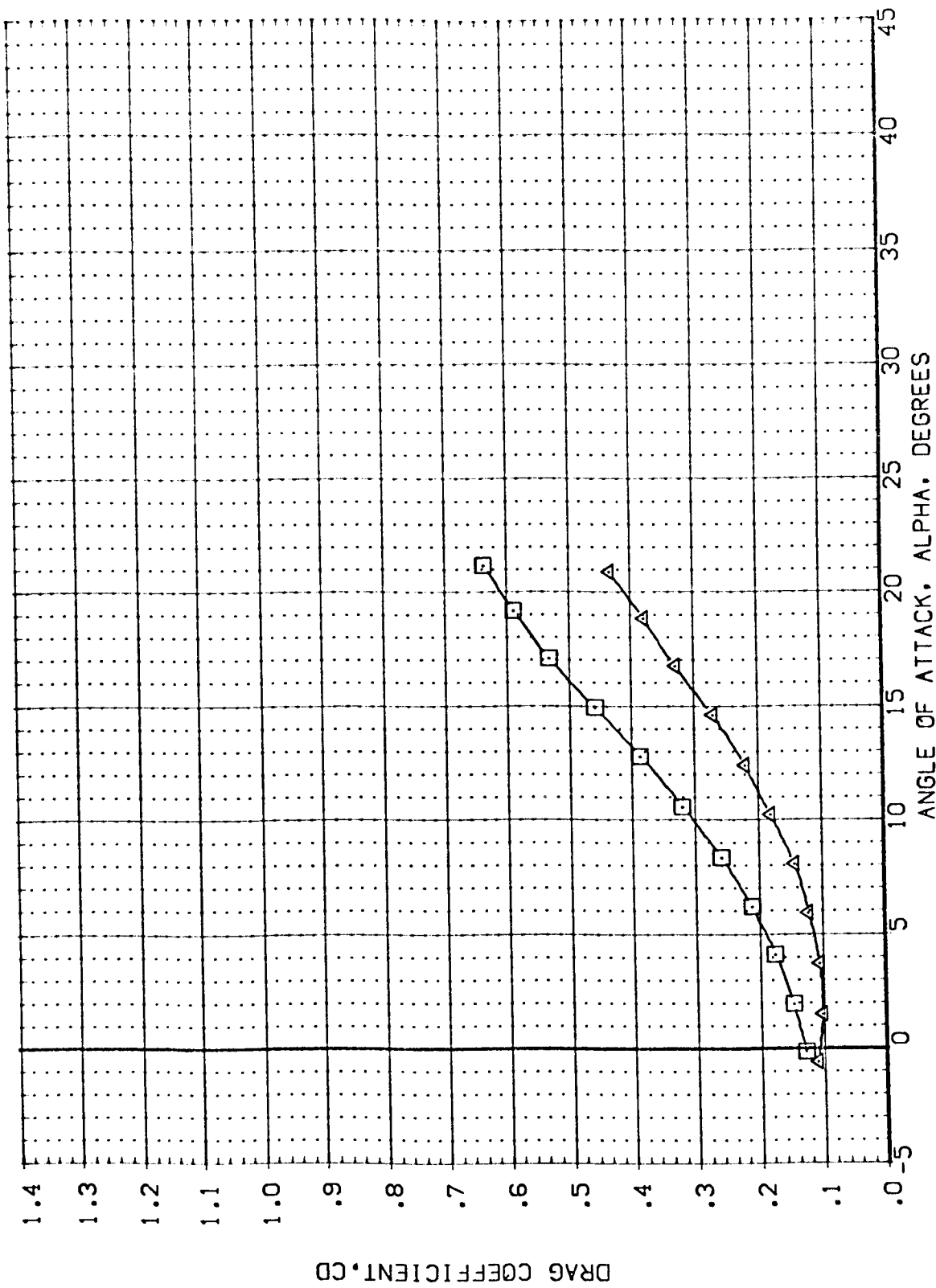


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 50.00
 .000 15.000 999.990 13.750 LREF 474.8000 1.00
 .000 -40.000 999.990 -14.250 BREF 938.7000 1.00
 .000 -20.000 999.990 .000 XREF 838.7000 1.00
 .000 .000 .000 .000 VREF .0000 1.00
 .000 .000 .000 .000 WREF .0000 1.00
 .000 .000 .000 .000 ZREF .0000 1.00
 .000 .000 .000 .000 SCALE .0000 1.00

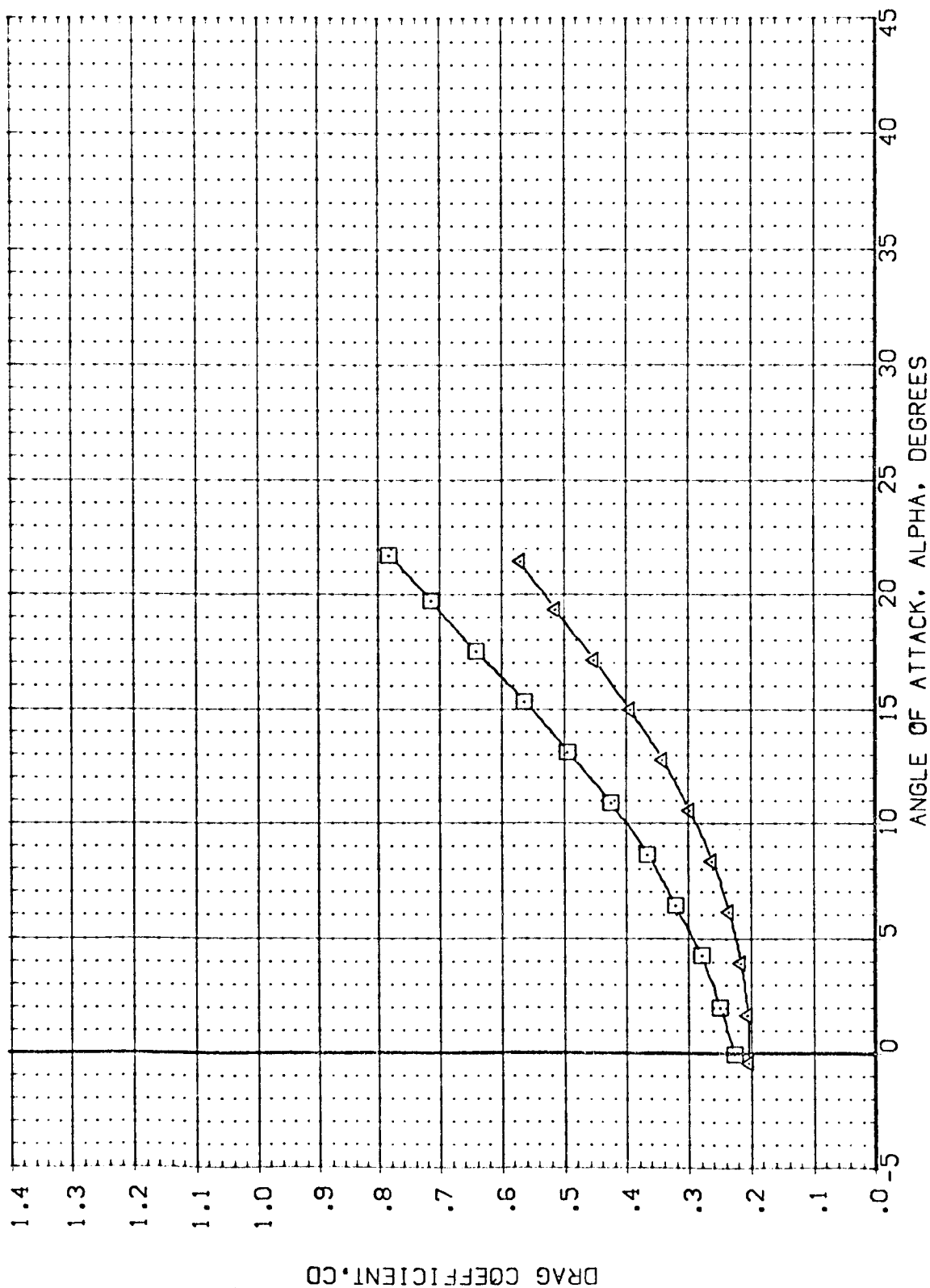


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOGRK	BOFLAP	REFERENCE INFORMATION
(X87565)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(X87577)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	15.000	999.999	13.750	LREF 474.8000
(X87581)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-40.000	999.999	-14.250	BREF 936.7000
(X87579)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-20.000	999.999	.000	XMRP 838.7000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

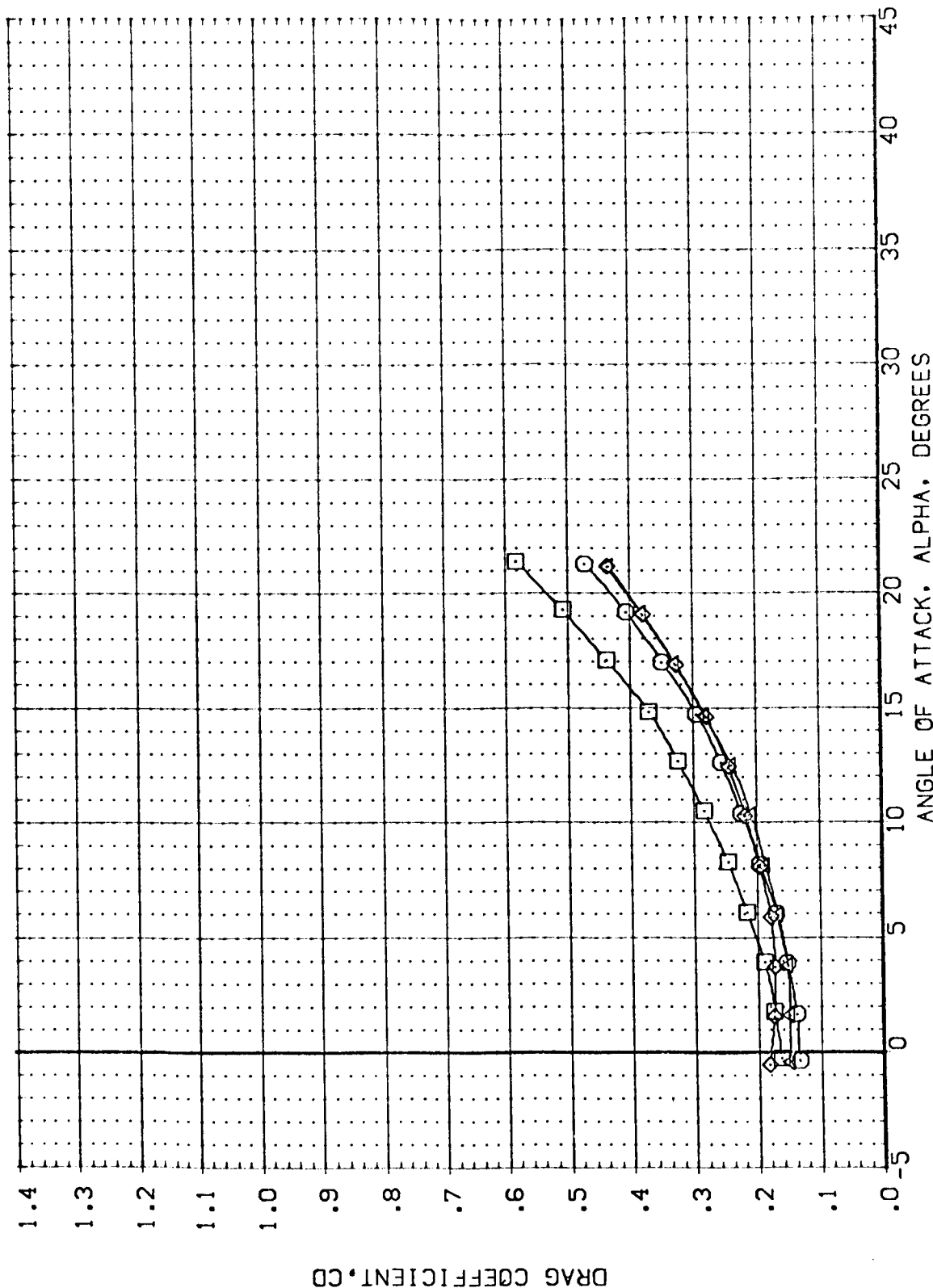


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CD)MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

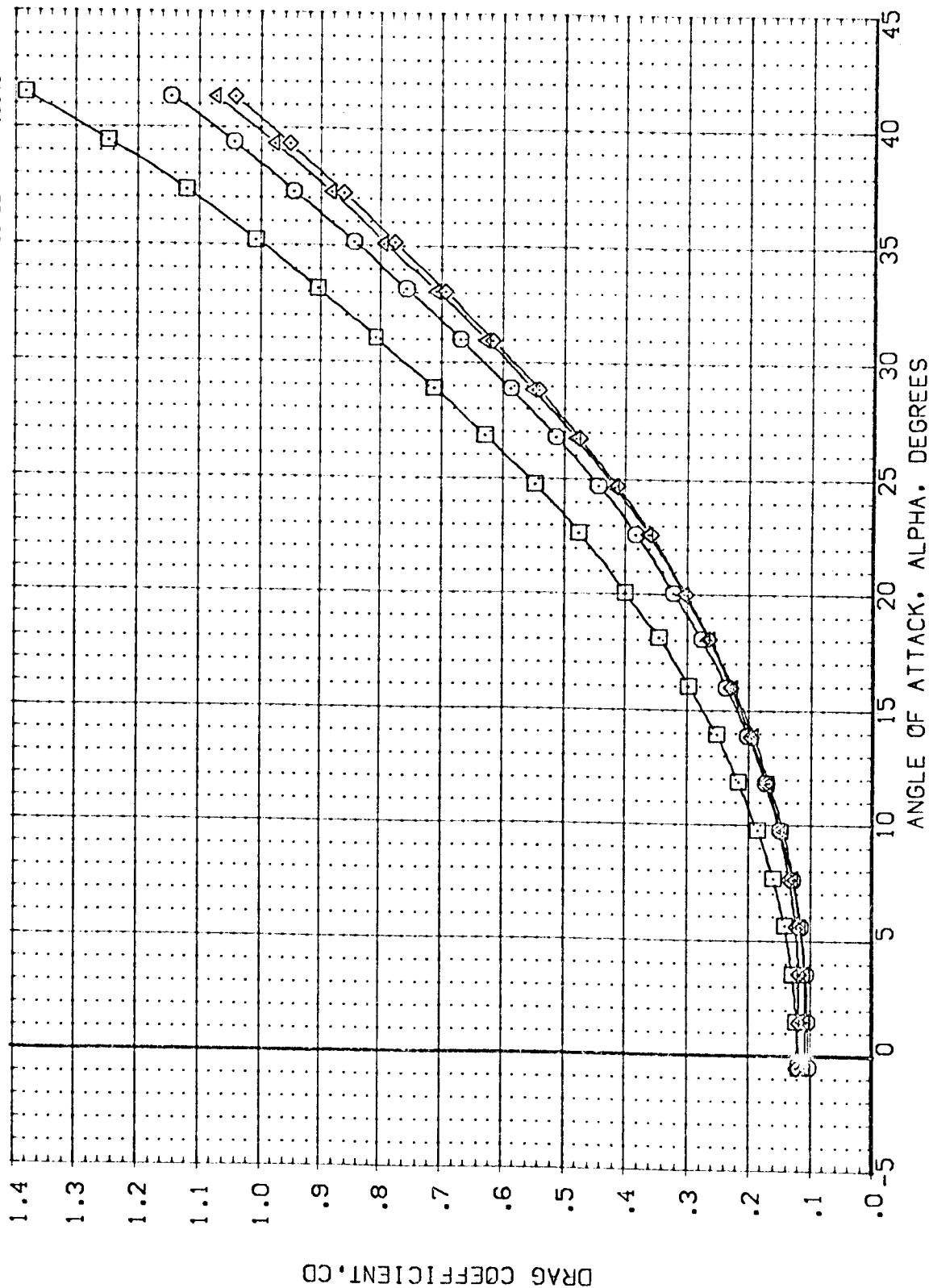


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

CEJ MACH = 2.99

DATA SET SYMBOL: X87S66, X87S77, X87S81, X87S79

CONFIGURATION DESCRIPTION: MSFC 574(CA48) ORB 139 W/ALT NOSE, MSFC 574(CA48) ORB 139 W/ALT NOSE, MSFC 574(CA48) ORB 139 W/ALT NOSE, MSFC 574(CA48) ORB 139 W/ALT NOSE

BETA: .000, .000, .000, .000

ELEVTR: .000, 15.000, -40.000, -20.000

SPOBRK: 999.990, 999.990, 999.990, 999.990

BOFLAP: .000, 13.750, -14.250, .000

REFERENCE INFORMATION: SREF 2690.0000 SC.FT., LREF 474.8000, BREF 936.7000, XREF 838.7000, YREF .0000, ZREF .0000, SCALE .0040

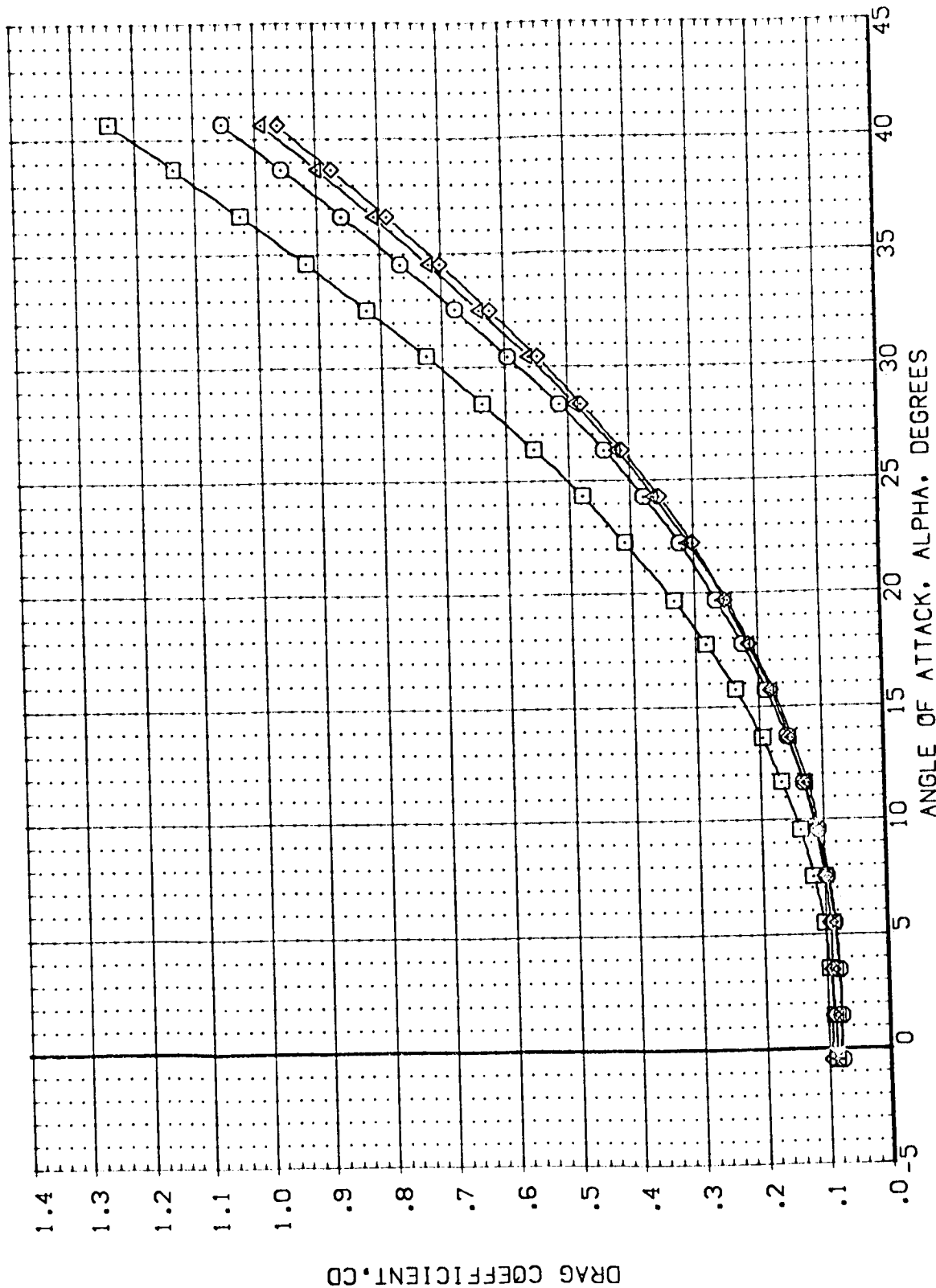


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

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BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE	INFORMATION
.000	.000	999.990	.000	SREF	2690.0000
.000	15.000	999.990	13.750	LEFF	474.0000
.000	-10.000	999.990	-14.000	BEFF	935.7000
.000	-20.000	999.990	.000	VRBP	898.7000
				VRBP	.0000
				ZPRP	.0000
				SCALE	.0040

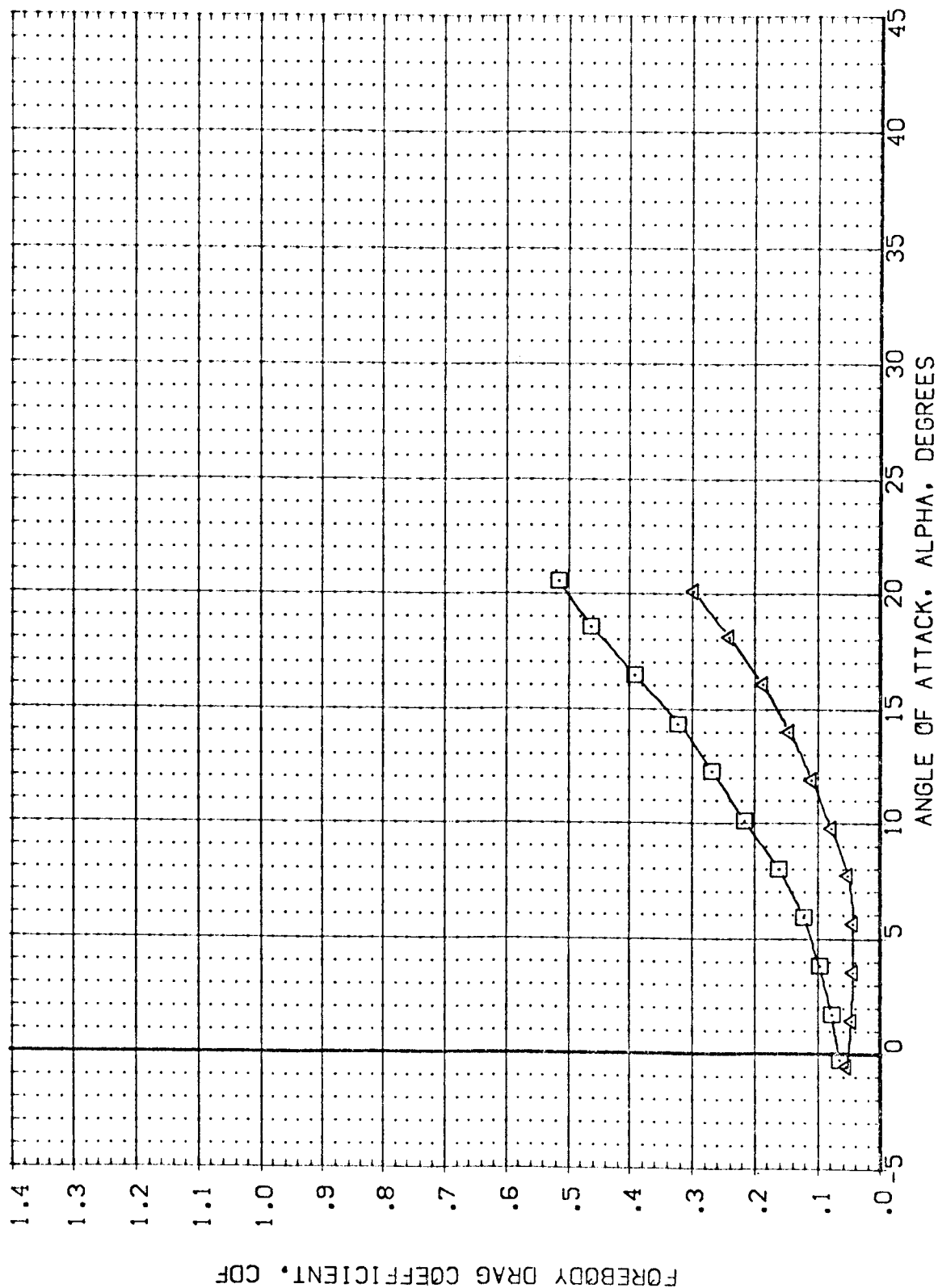


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
{X87S66}	DATA NOT AVAILABLE
{F87S77}	MSCC S74(OA48) CRB 139 V/ALT NOSE
{F87S78}	DATA NOT AVAILABLE
{F87S81}	DATA NOT AVAILABLE
{F87S84}	MSCC S74(OA48) CRB 139 V/ALT NOSE
{F87S79}	DATA NOT AVAILABLE

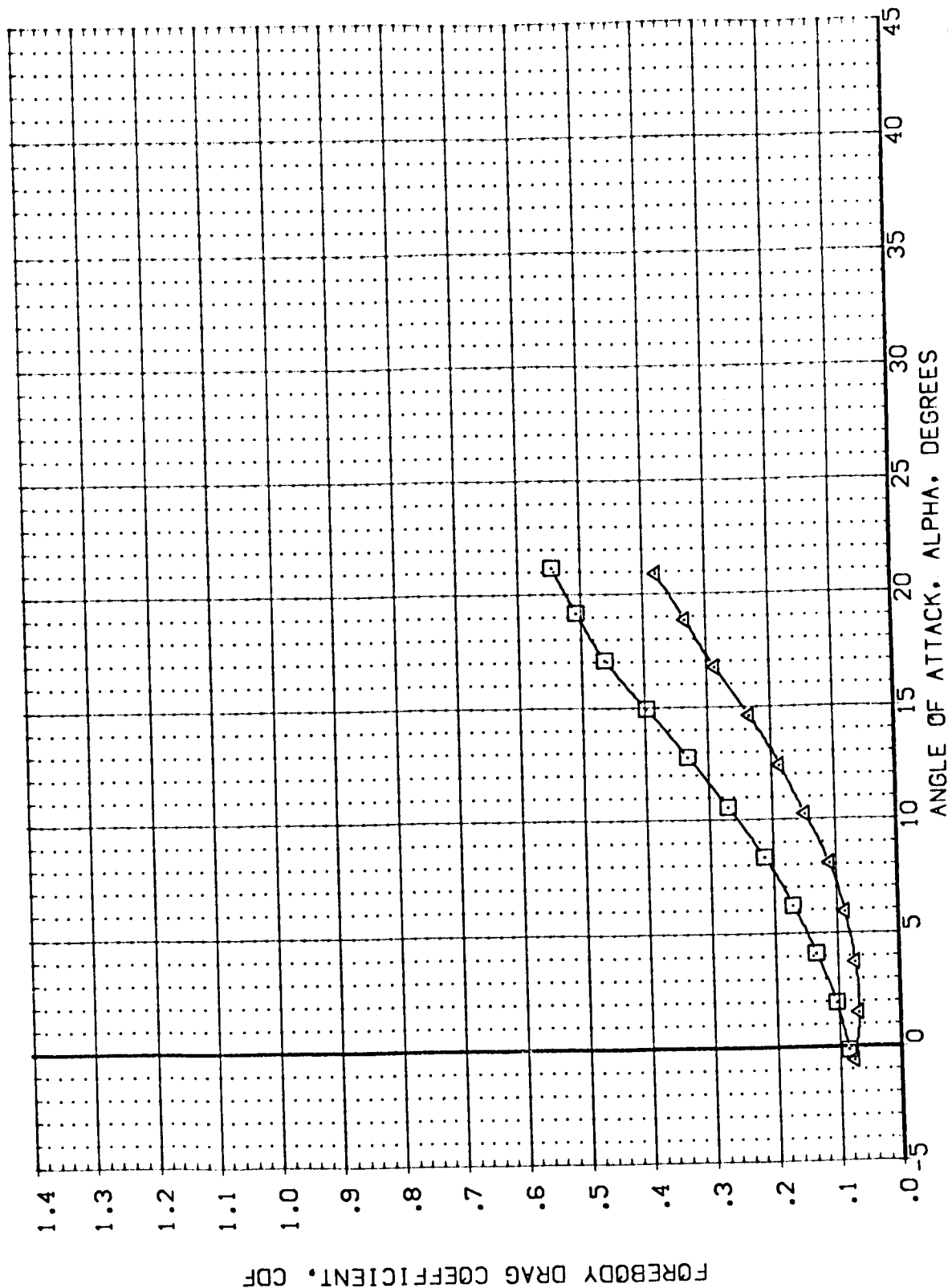


FIG. 17
EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

$$[B]_{MACH} = .90$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					.000	YMRP .0000 IN.
					.0040	ZMRP .0000 IN.
						SCALE .0040

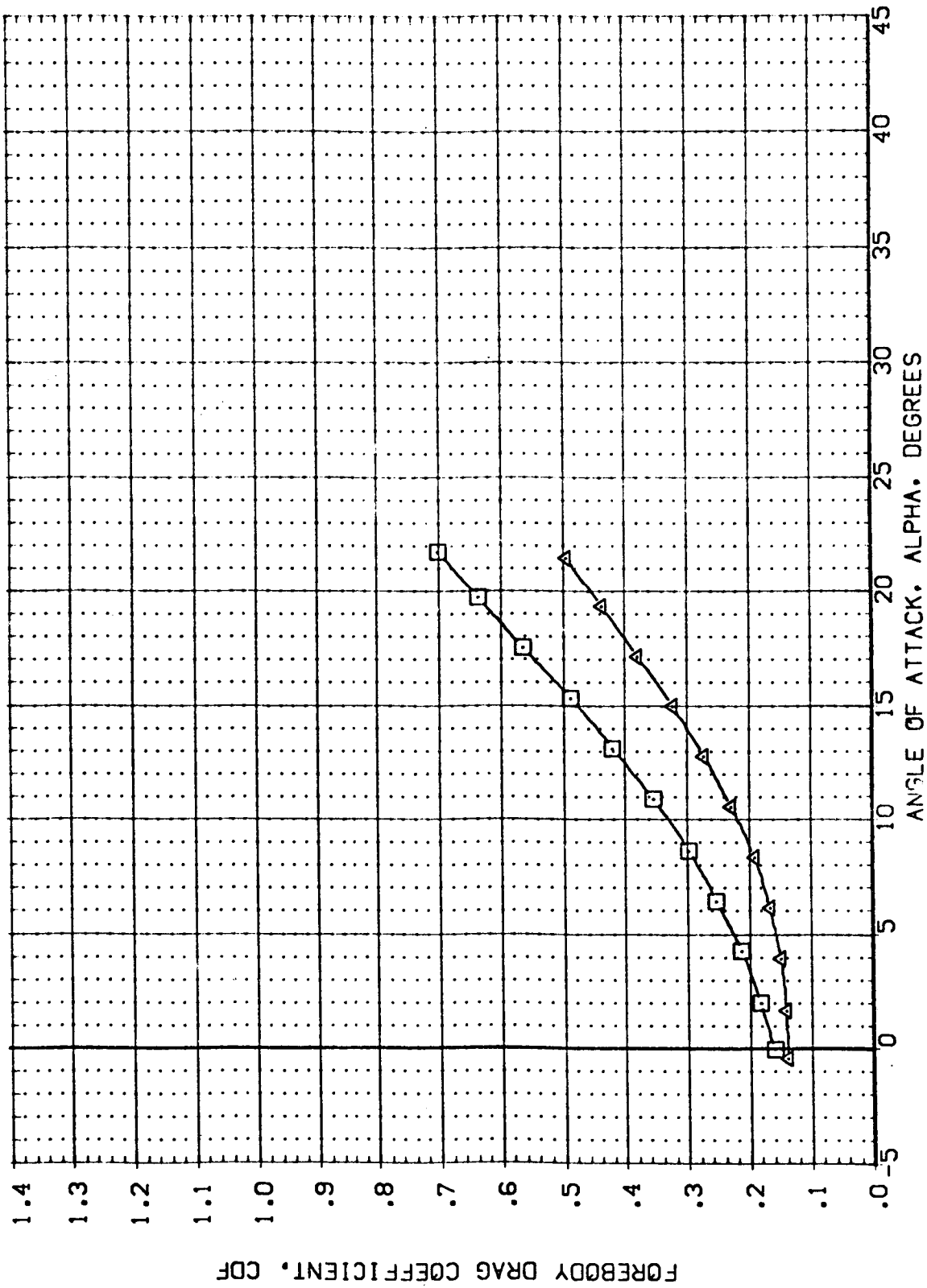


FIG. 17 EFFECT OF MAX CON ROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87556)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SG.F.T.
(F87577)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87581)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	YMRP 838.7000
						ZMRP .0000
						SCALE .0040

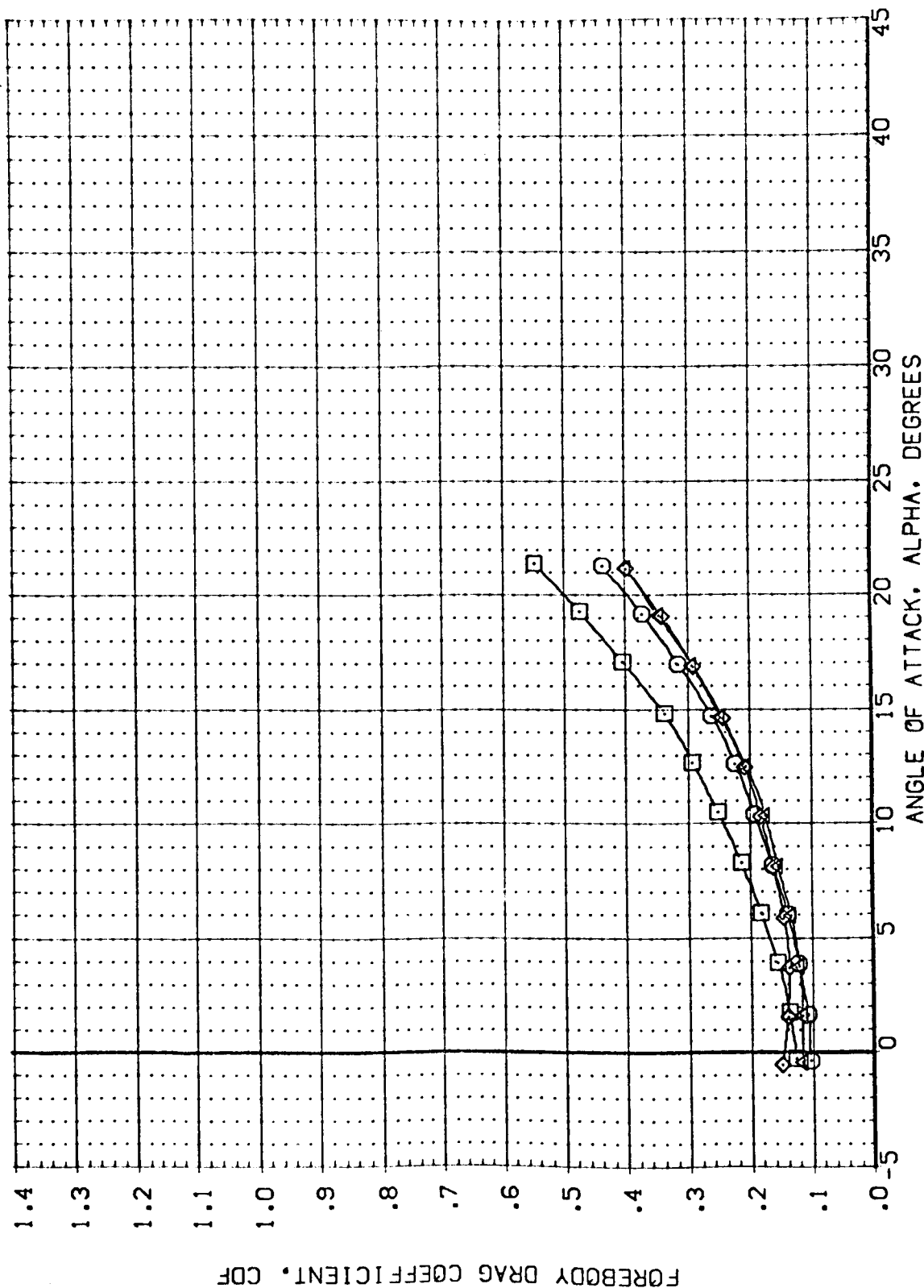


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (D)MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690 COCO
(F87577)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474 COCO
(F87581)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	YMRP 838.7000
						ZMRP .0000
						SCALE .0040

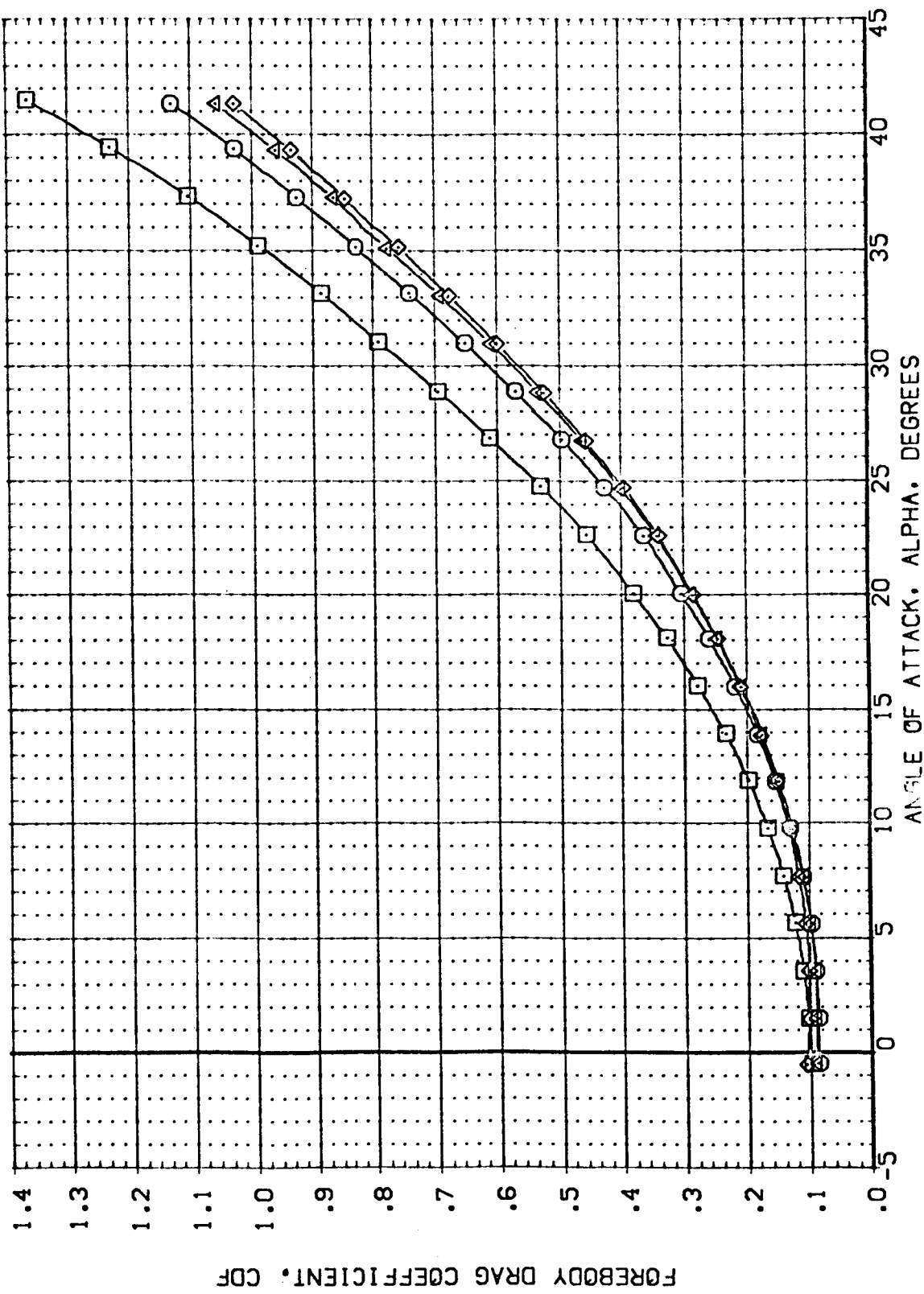


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.0000 N.
						YREF .0000 N.
						ZREF .0000 N.
						SCALE .0040

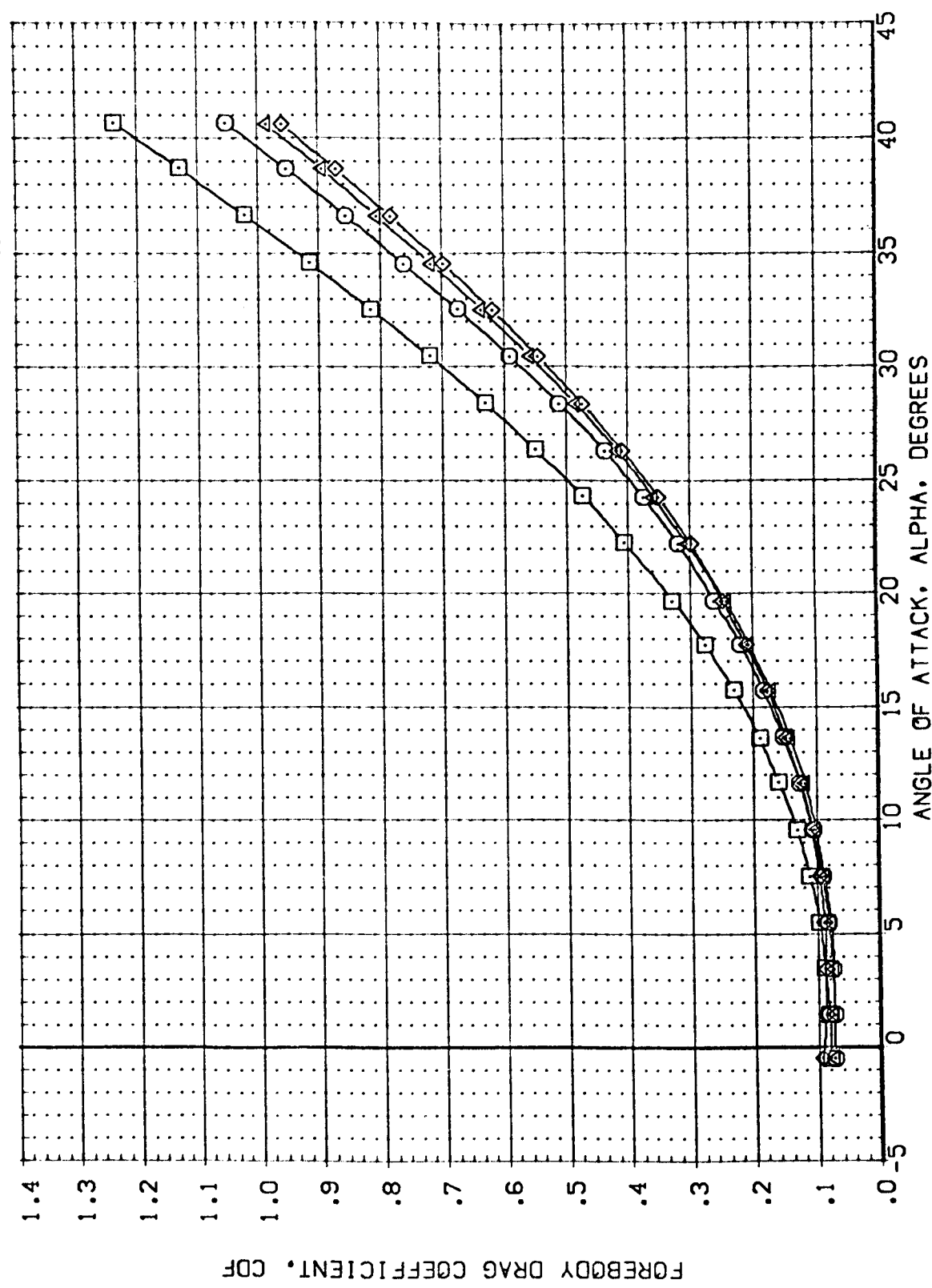


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOSRK	BOFLAP	REFERENCE INFORMATION
{X87S66}	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
{F87S77}	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
{F87S81}	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
{F87S79}	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					.000	ZMRP .0000 IN.
					.0010	SCALE

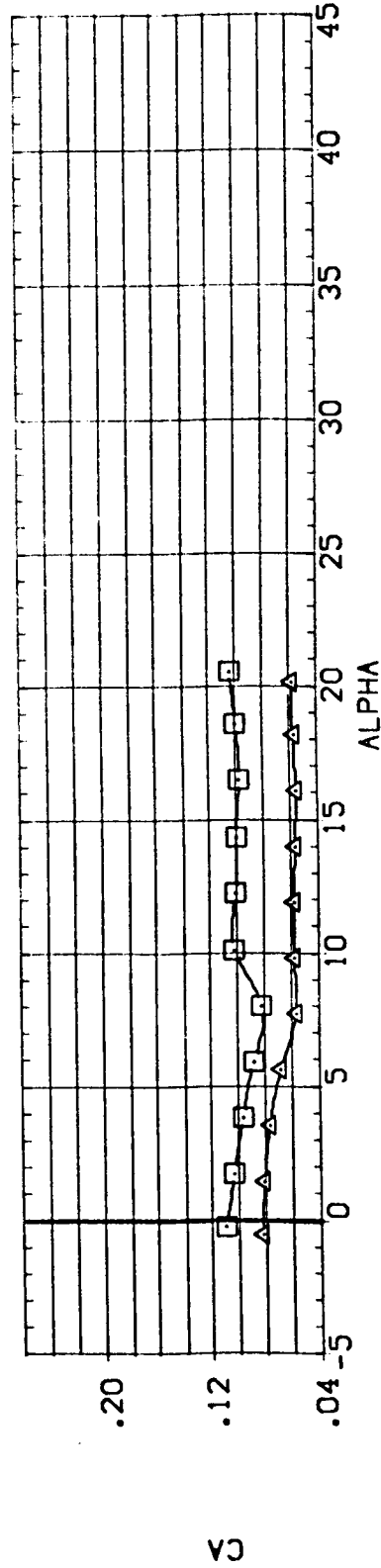
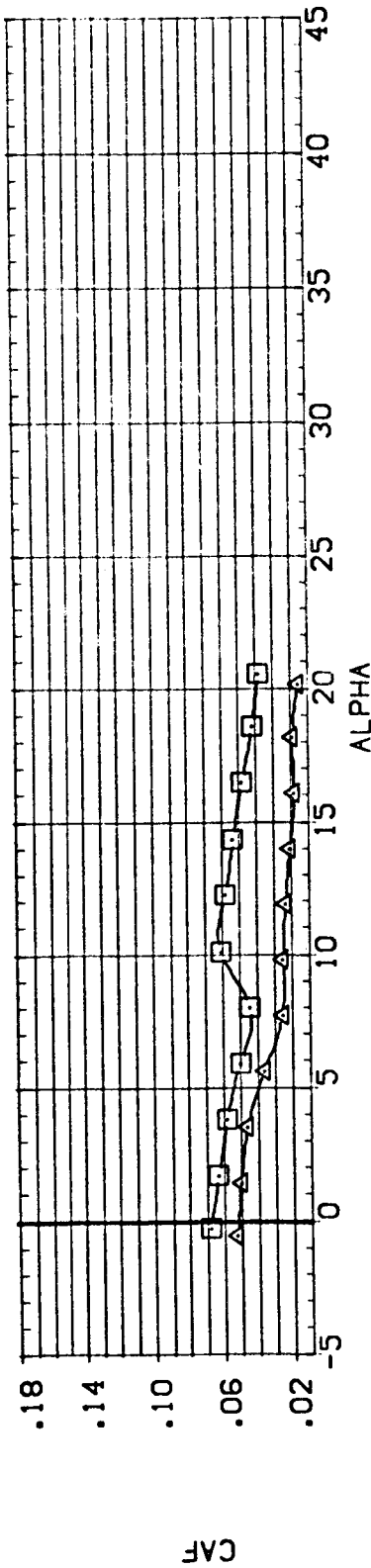
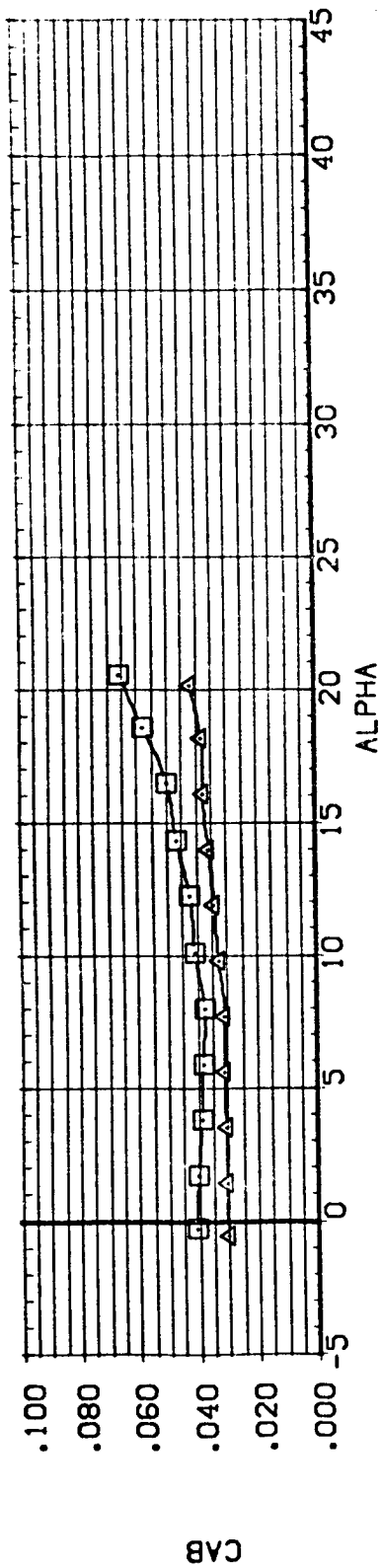


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

CA/MACH = .60

BETA	ELEVTR	SFCBRK	BOFLAP	REFERENCE	INFORMATION
.000	.000	999.990	.000	SREF	2690 0000
.000	15.000	999.990	13.750	LREF	474 8000
.000	-40.000	999.990	-14.000	BREF	936 7000
.000	-20.000	999.990	.000	XREF	838 7000
				YREF	.0000
				ZREF	.0000
				SCALE	.0040

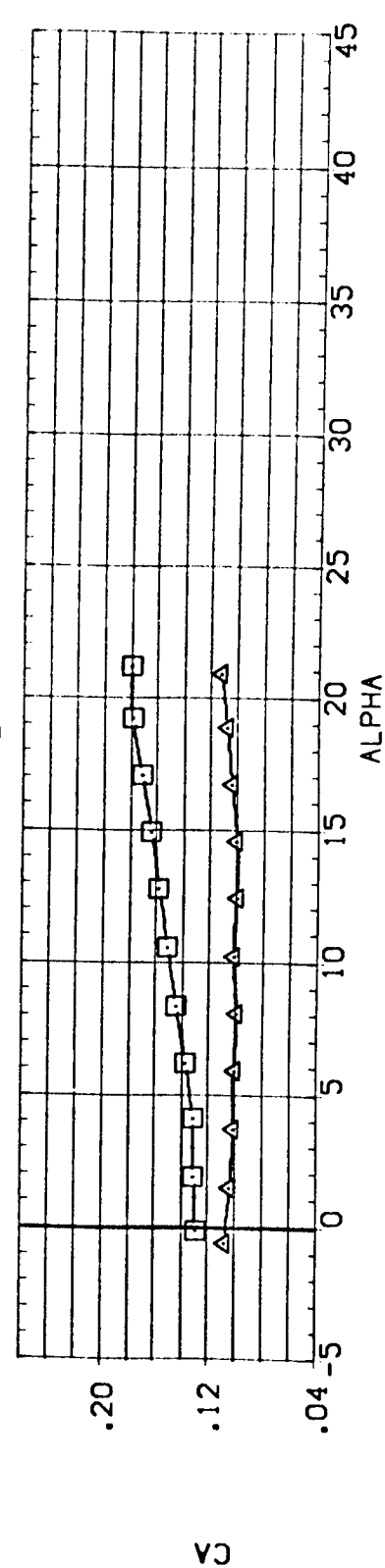
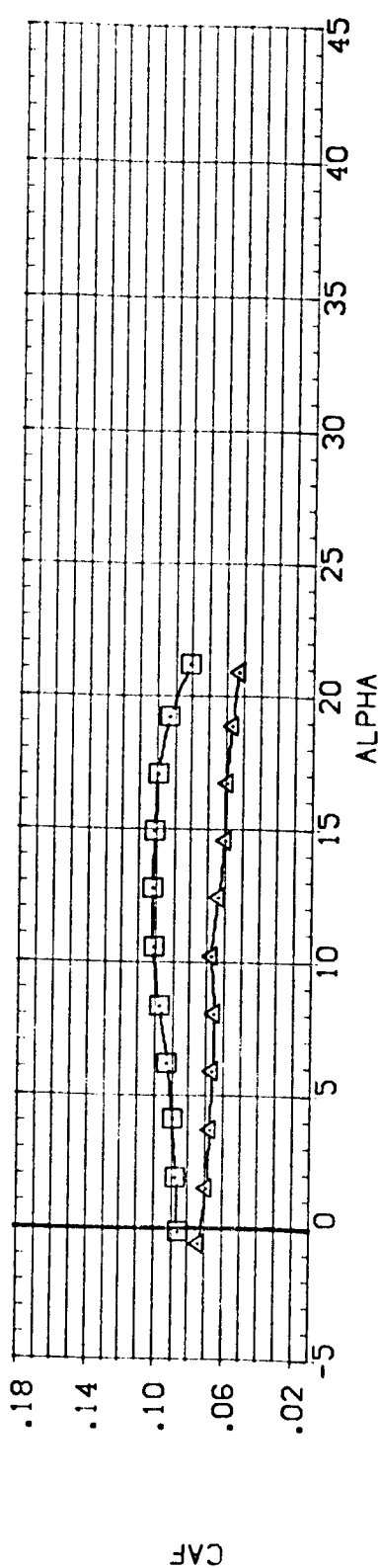
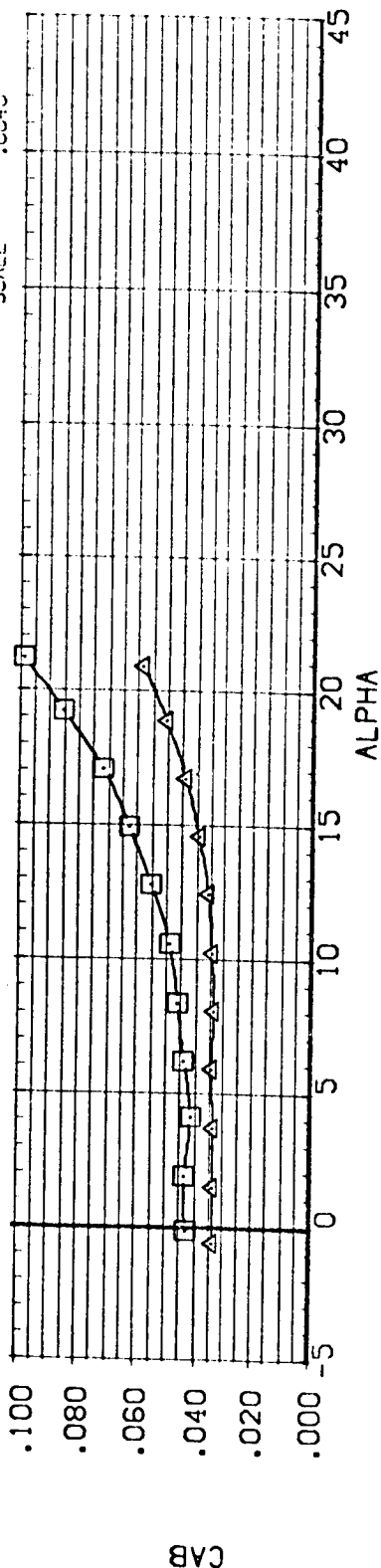
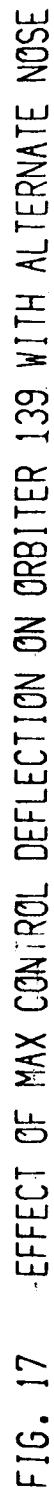


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOISE

BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE	INFORMATION
.000	.000	999.990	.000	SREF	2690.0000
.000	15.000	999.990	13.750	LREF	474.8000
.000	-40.000	999.990	-14.250	BREF	936.7000
.000	-20.000	999.990	.000	XMRP	838.7000
				YMRP	.0000
				ZMRP	.0000
				SCALE	.0040



```
CCMACH = 1.20
```

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.200	BREF 936.7000 IN.
(F87S79)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000 IN.
					.000	YREF .0000
					.000	ZREF .0000
					.0040	SCALE

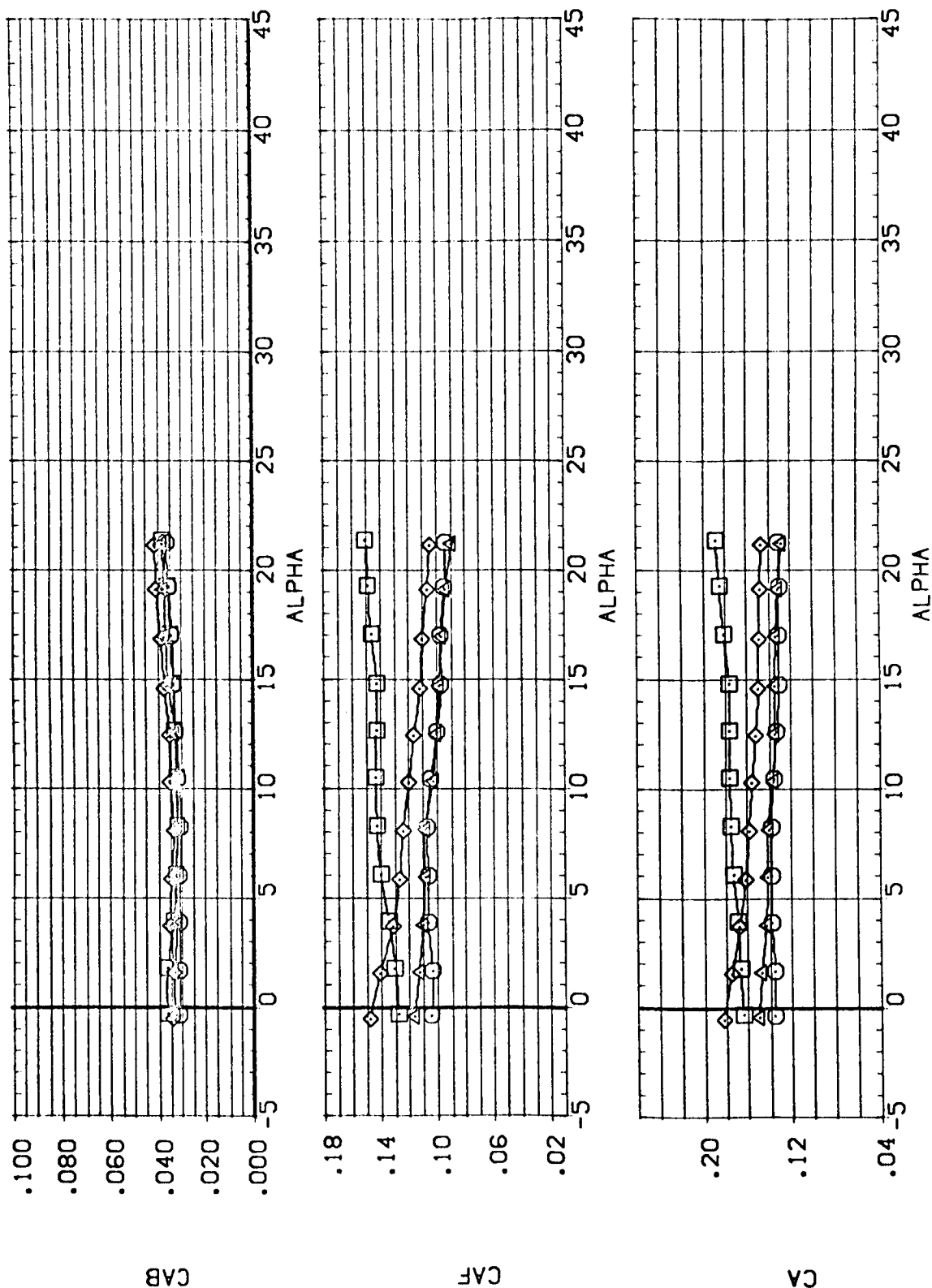


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(O)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SG.FT.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87S81)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 N.
					YMRP .0000 N.	ZMRP .0000 N.
					SCALE .0040	

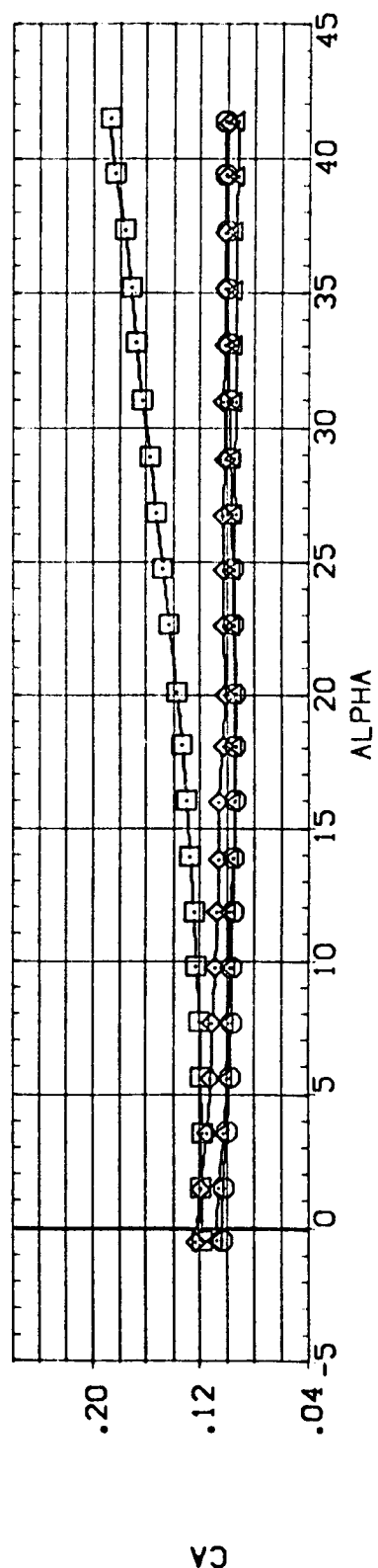
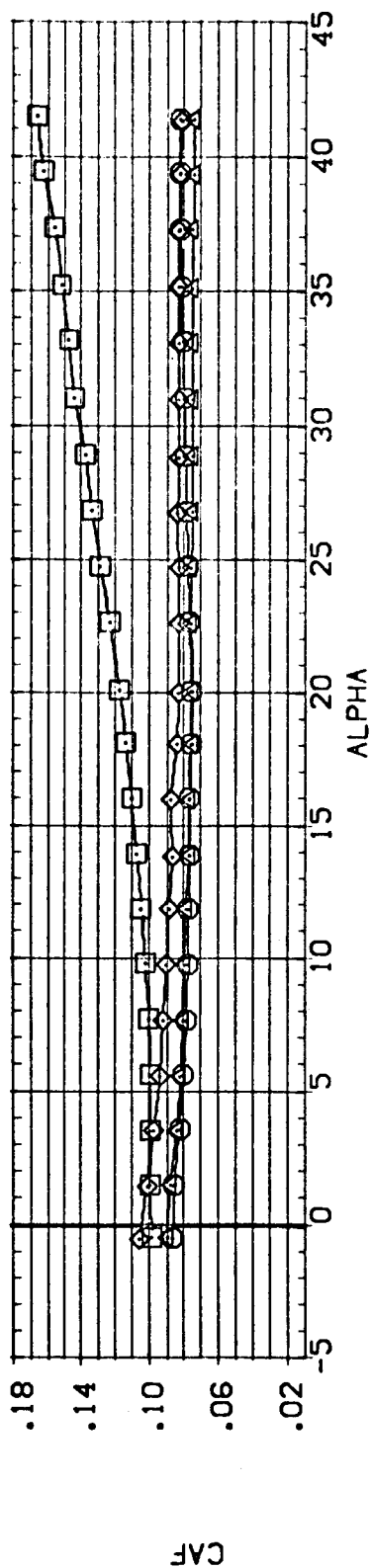
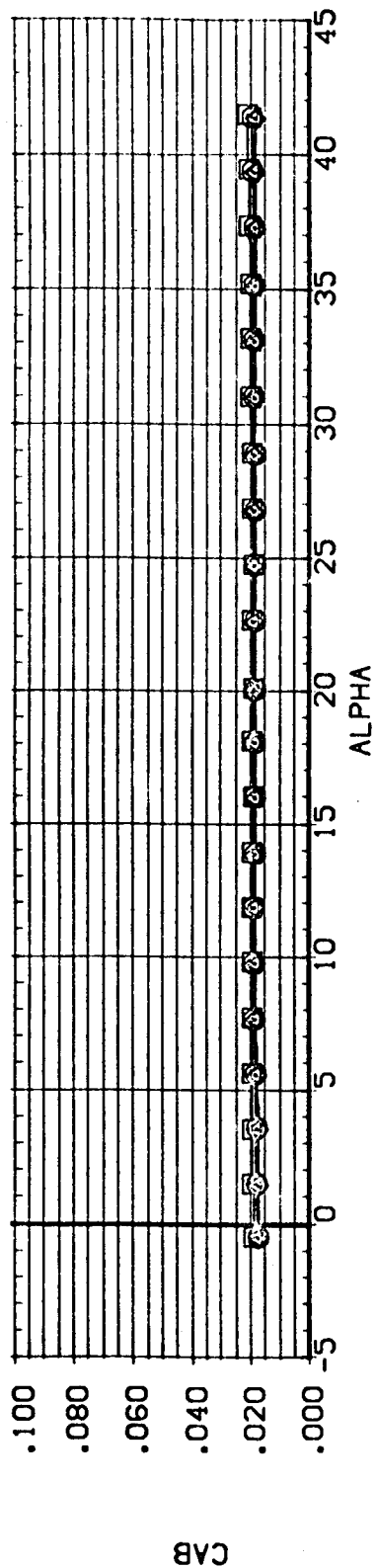


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOELAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	X-PRP 838.7000 IN.
					.000	Y-MRP .0000 IN.
					.0040	Z-MRP .0000 IN.
					.0040	SCALE

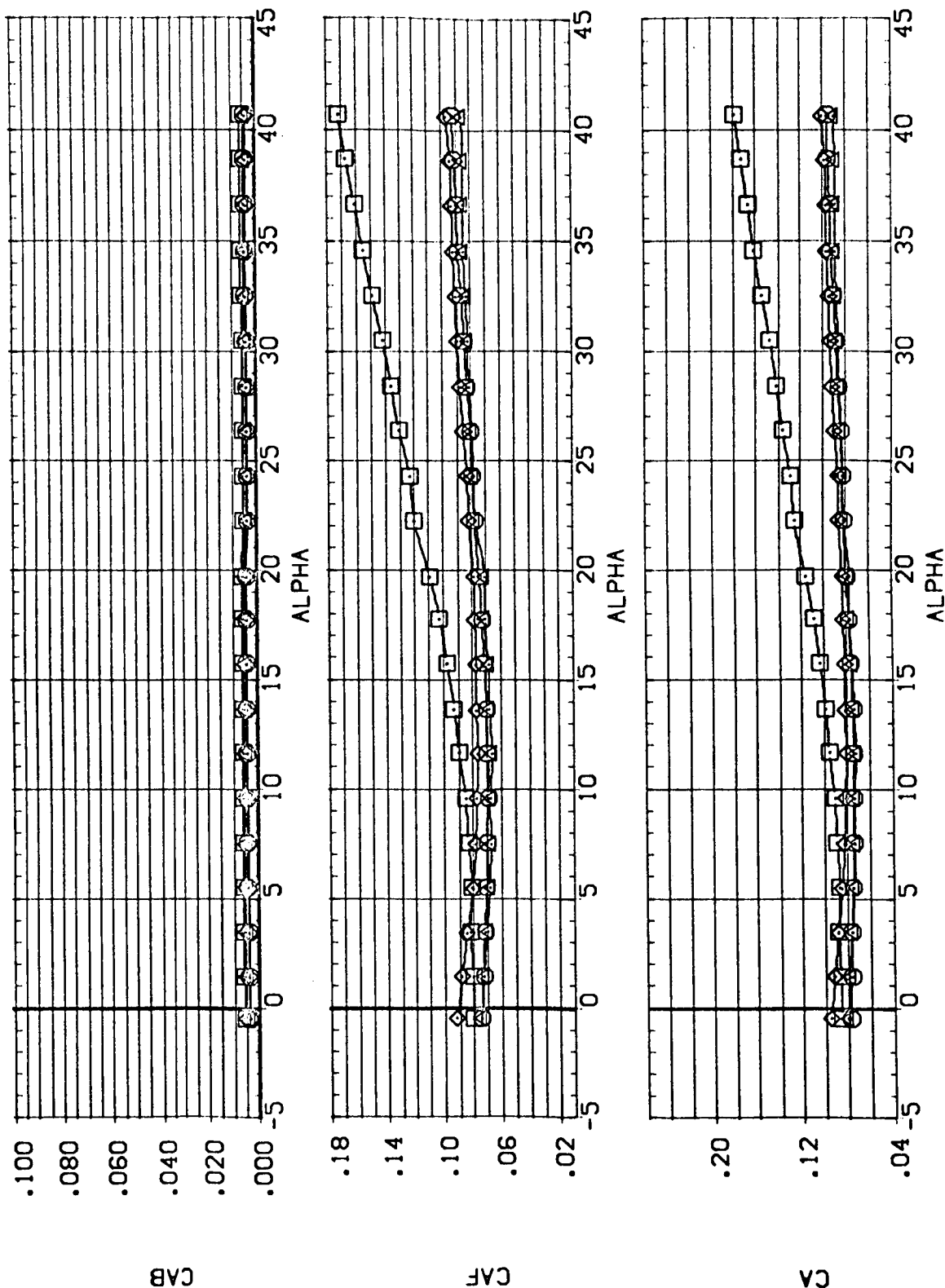


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(X87566)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRF 838.7000
						YMRF .0000
						ZMRF .0000
						SCALE .0040

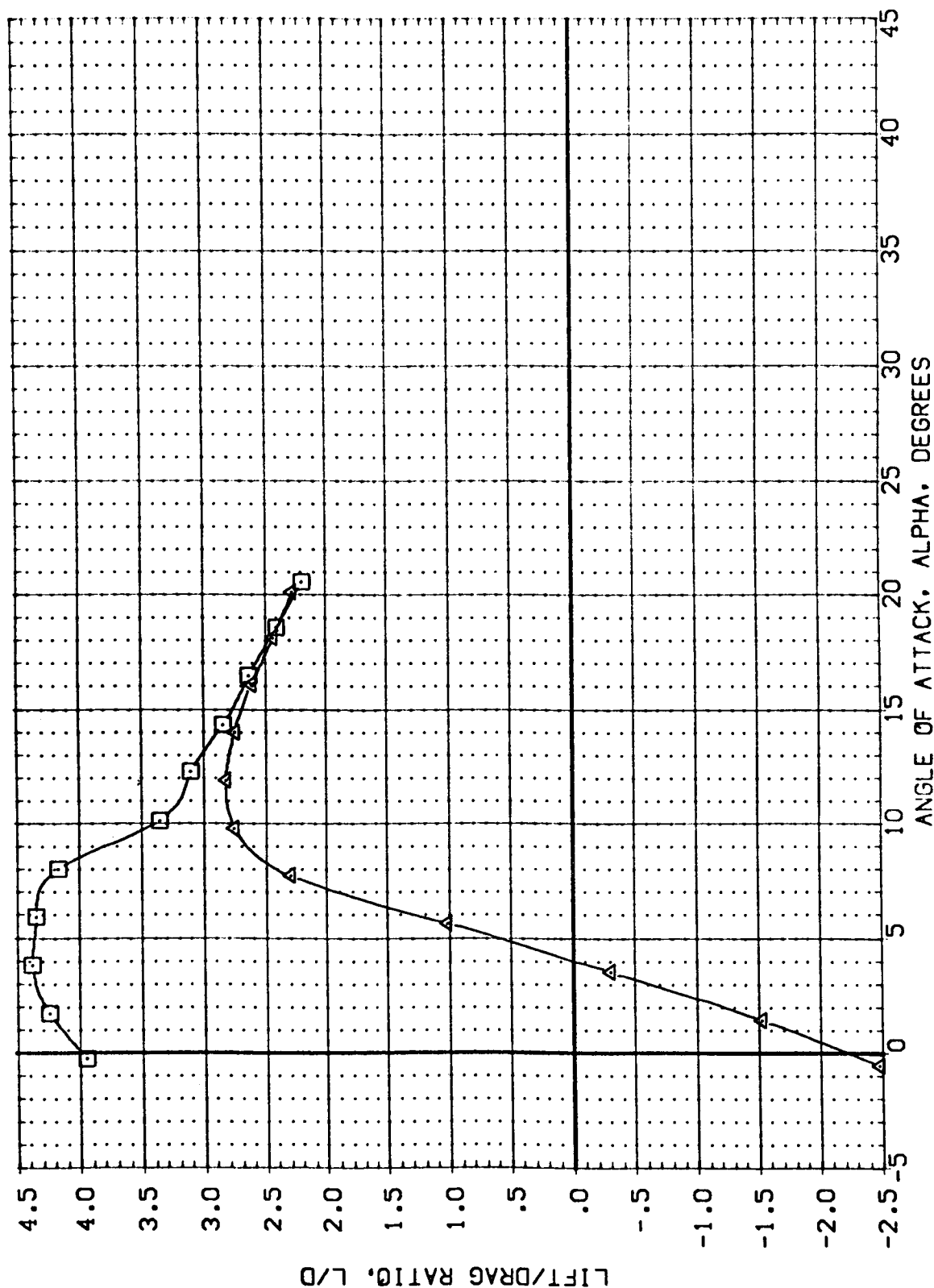


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
{X87S66}	DATA NOT AVAILABLE	
{F87S77}	M5C 574(CA48) CRB	139 W/ALT NOSE
{F87S78}	DATA NOT AVAILABLE	
{F87S79}	M5C 574(CA48) CRB	139 W/ALT NOSE

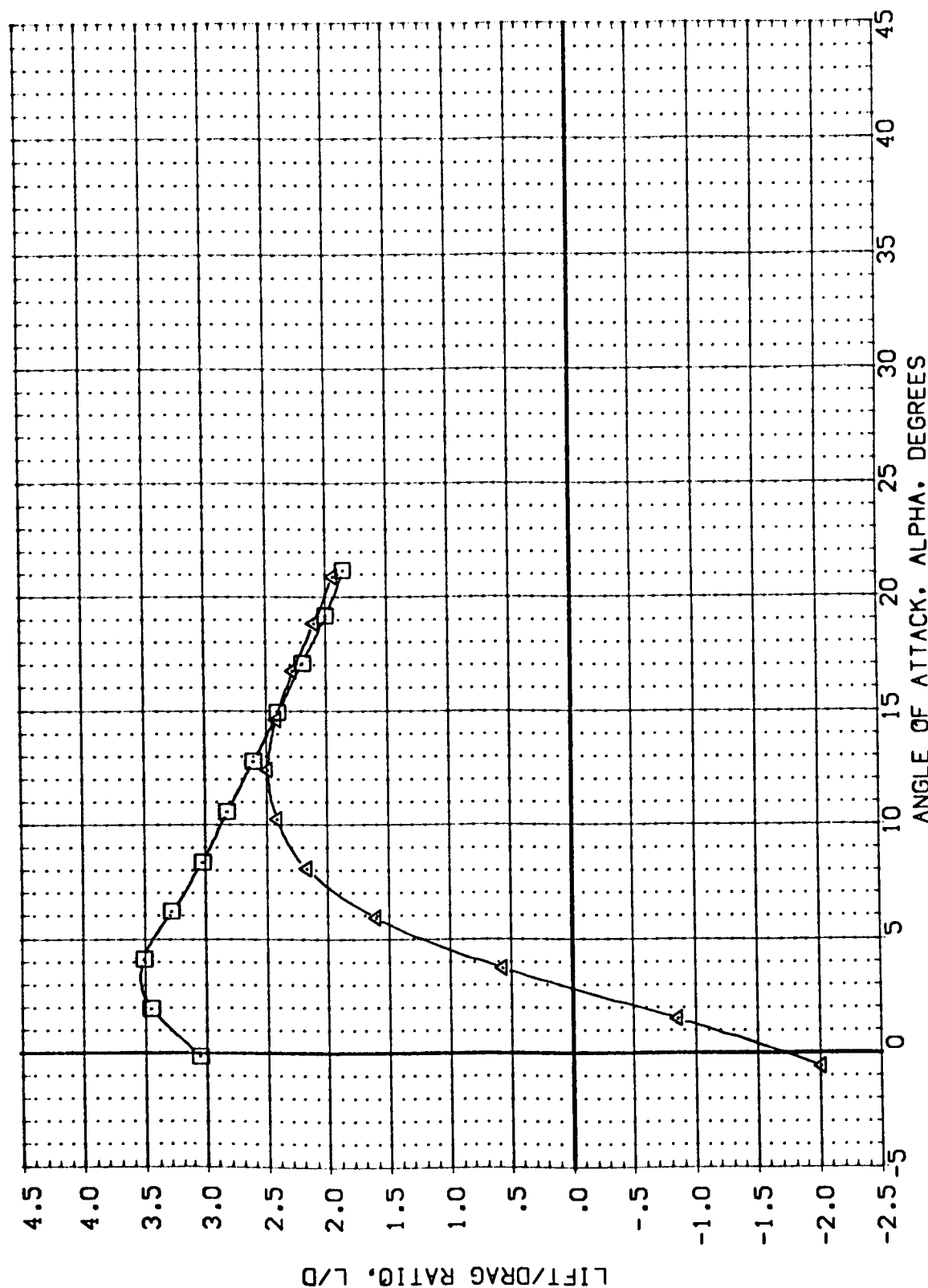


FIG. 17
EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

$$[B]_{MACH} = .90$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574(CA48) CRB 139 V/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) CRB 139 V/ALT NOSE

BETA ELEVTR SPDRBK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

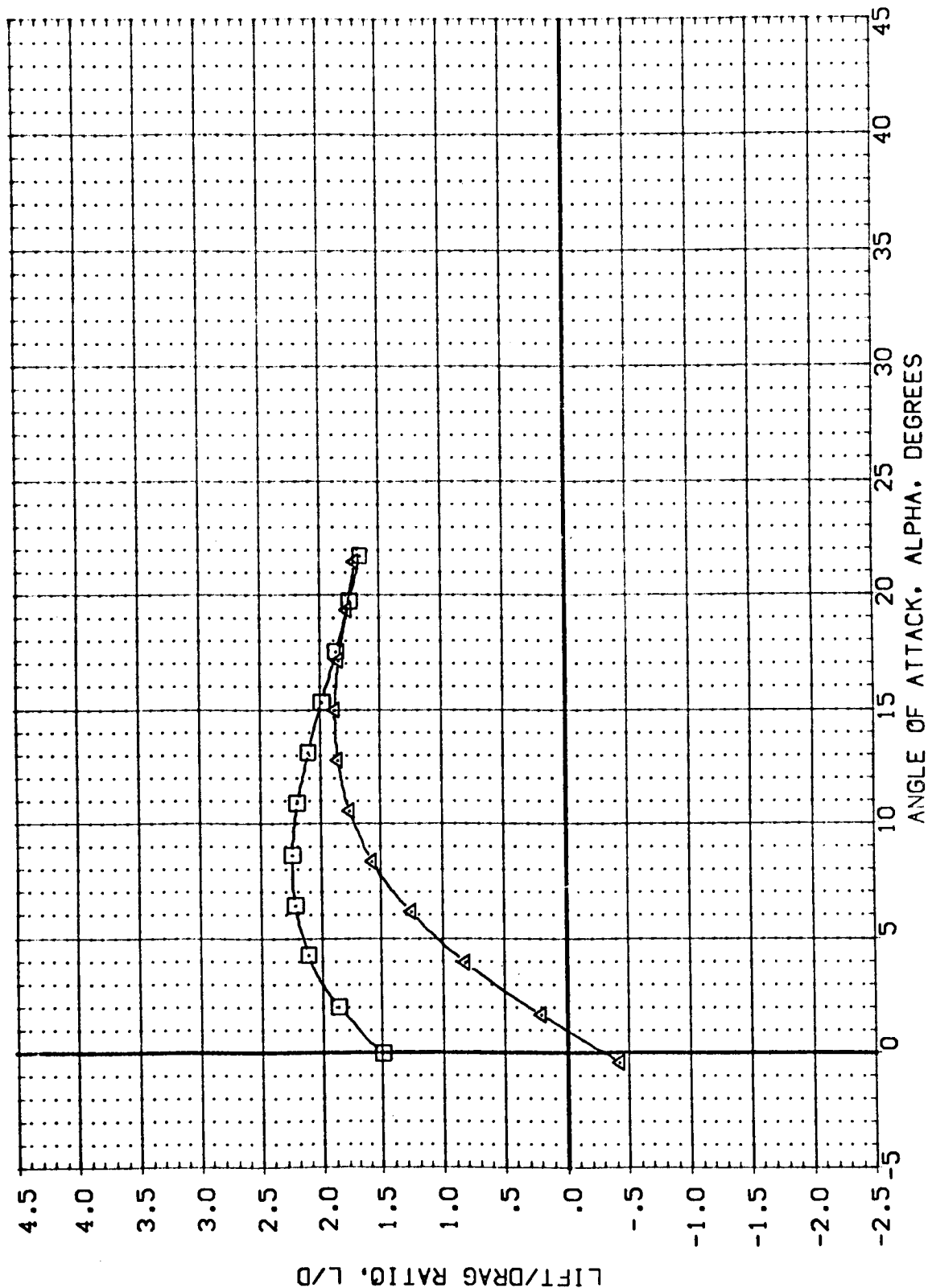


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574 (OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574 (OA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574 (OA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574 (OA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0040

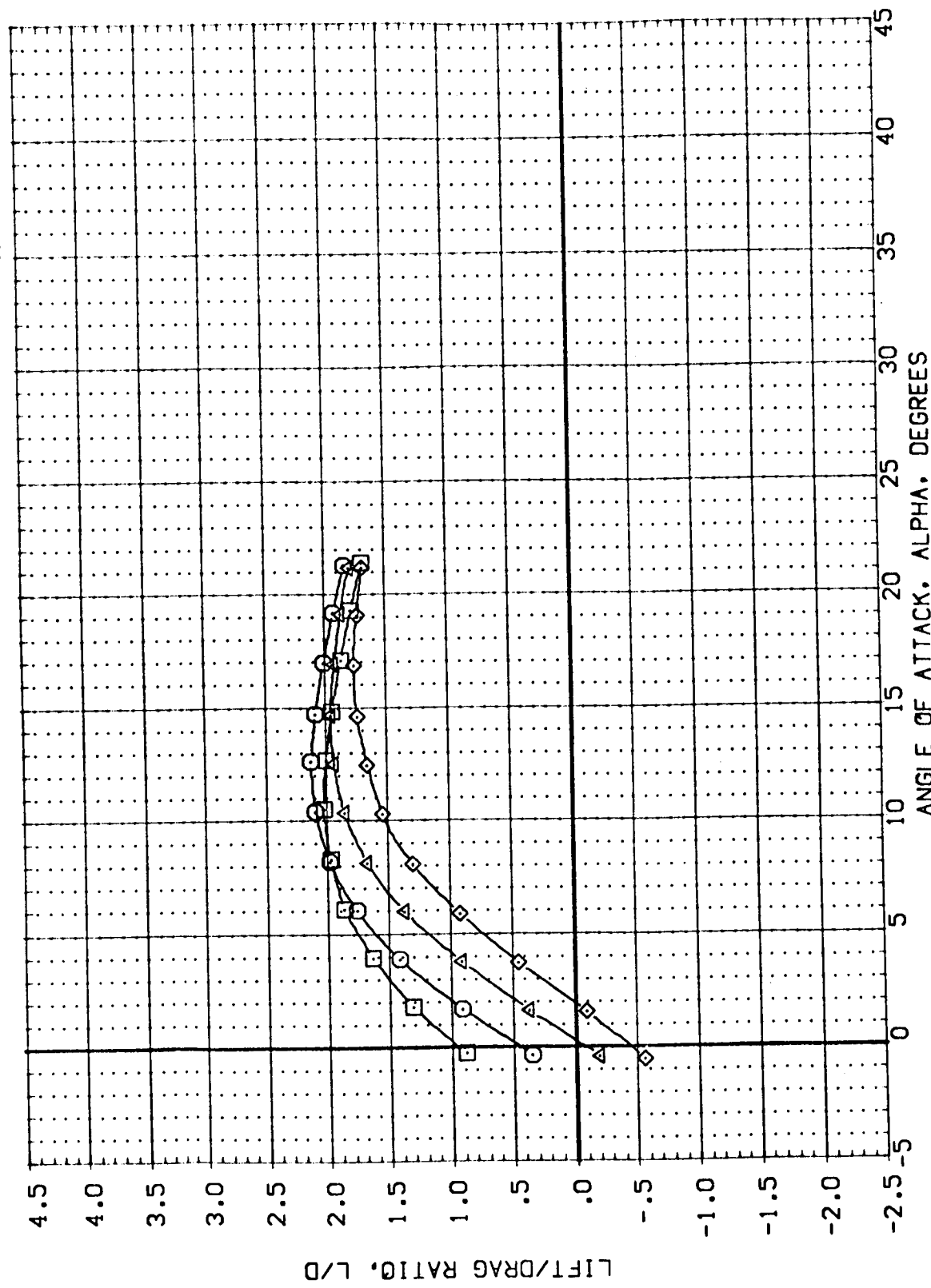


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (D)MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					YMRP .0000 IN.	ZMRP .0000 IN.
						SCALE .0040

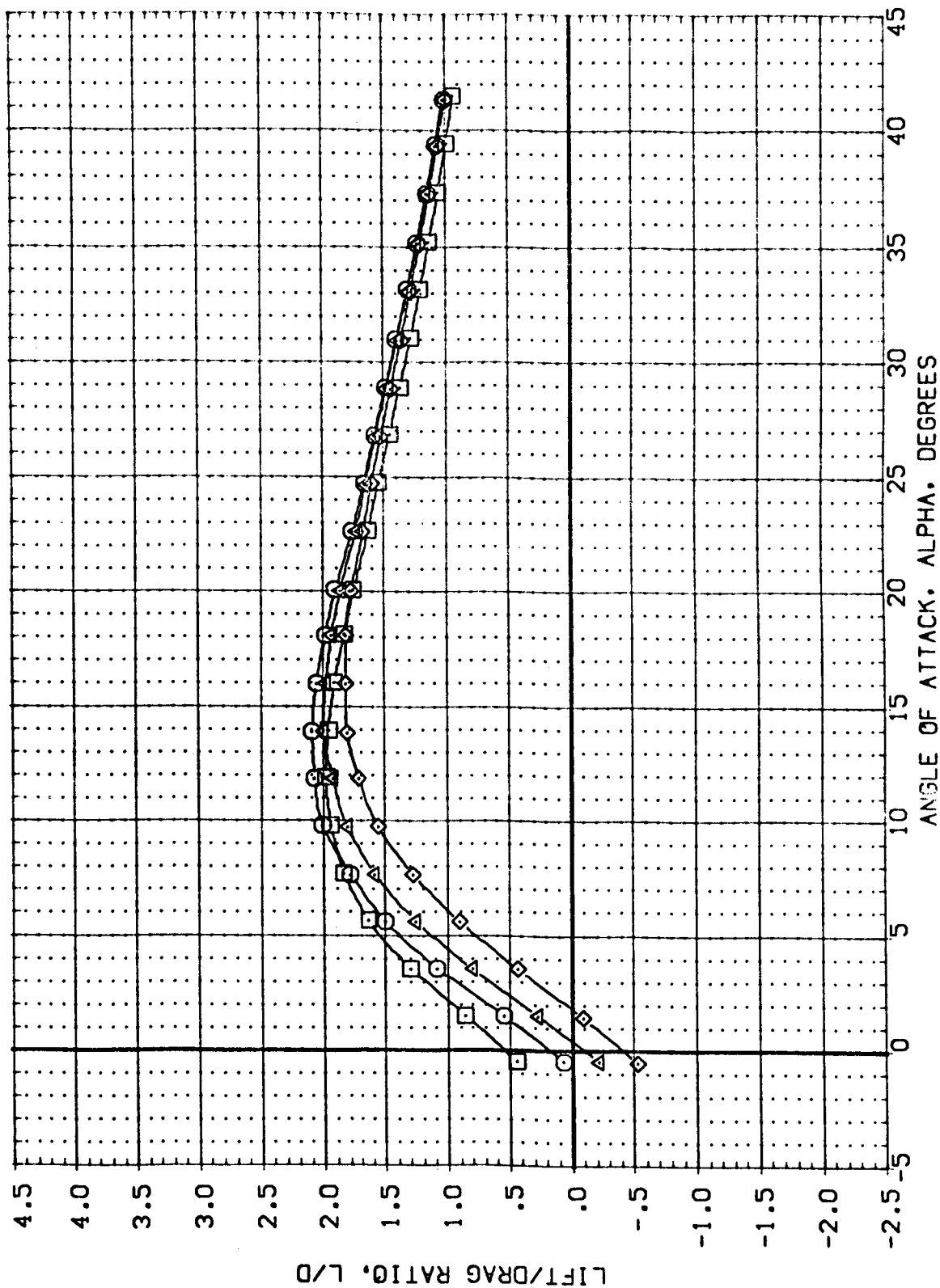


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87581)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87579)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					.000	YMRP .0000 IN.
					.000	ZMRP .0000 IN.
					.0040	SCALE

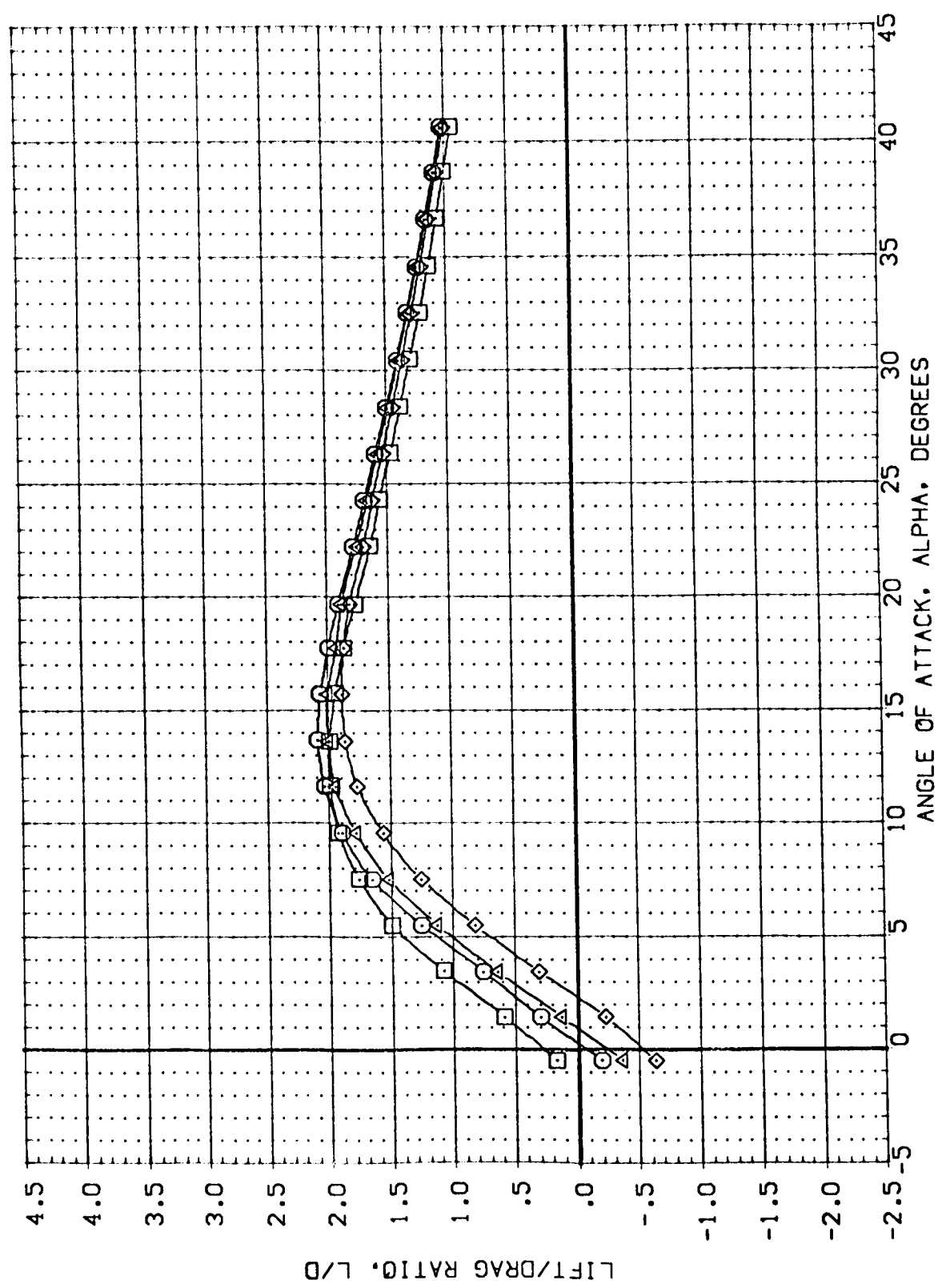


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 860

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOELAP	REFERENCE INFORMATION
(X87566)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87579)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					.000	ZMRP .0000 IN.
					.0040	SCALE

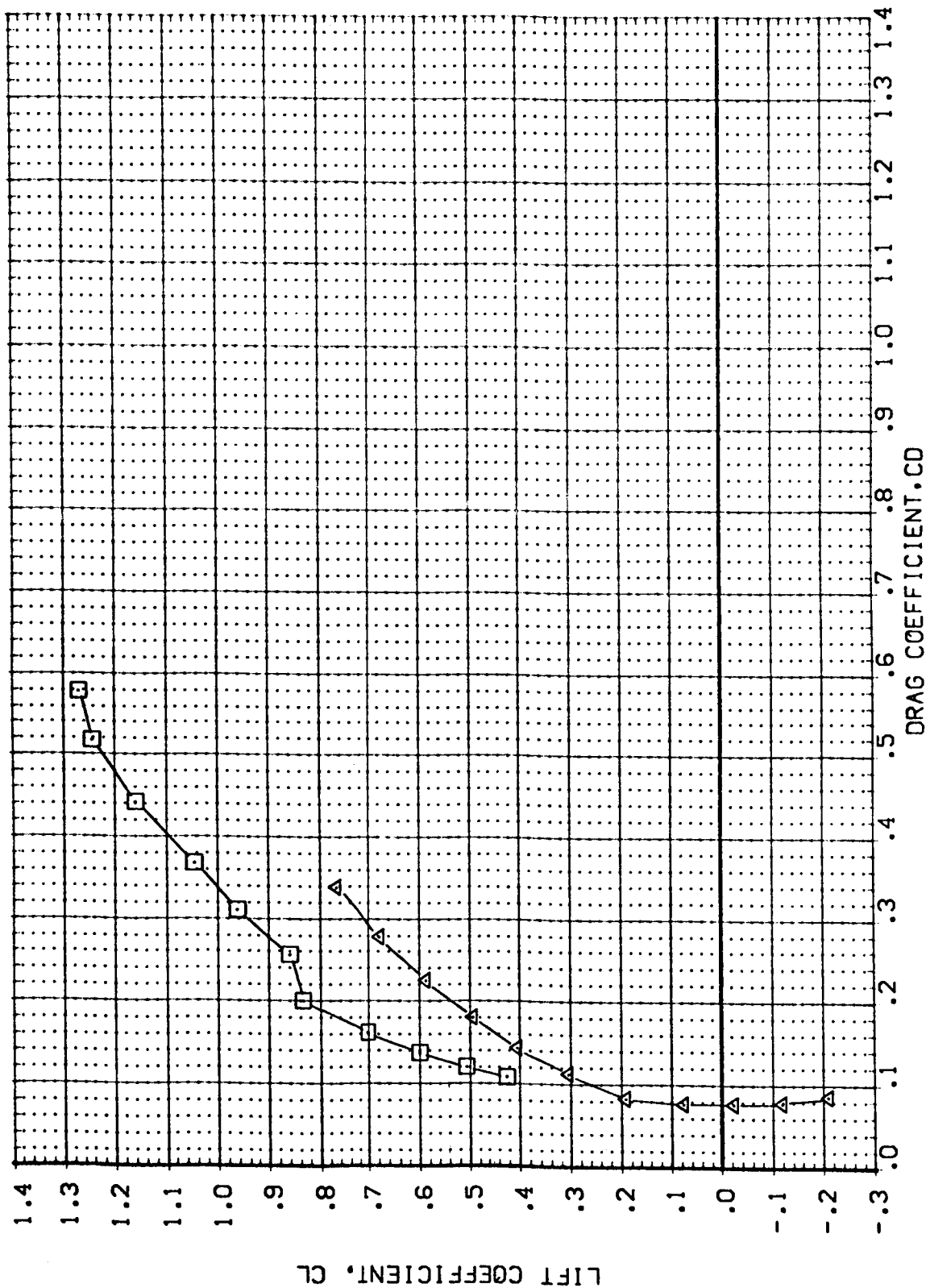


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

CAJ MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87566)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87577)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

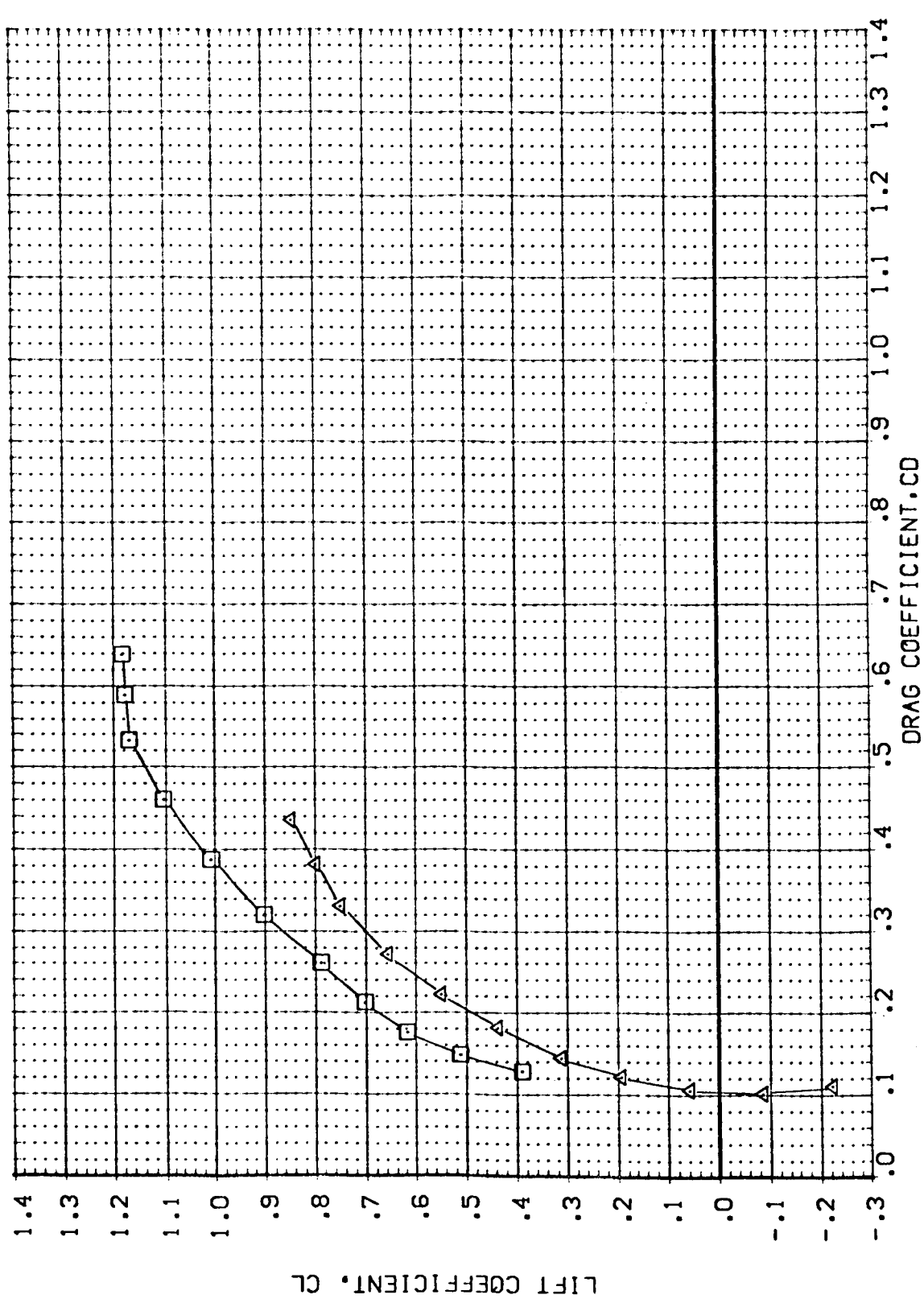


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B)MACH = .90
 PAGE 862

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{X87S66}	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000
{F87S77}	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
{F87S81}	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
{F87S79}	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XVREF 838.7000
					YVREF .0000	N.
					ZVREF .0000	N.
					SCALE .0040	N.

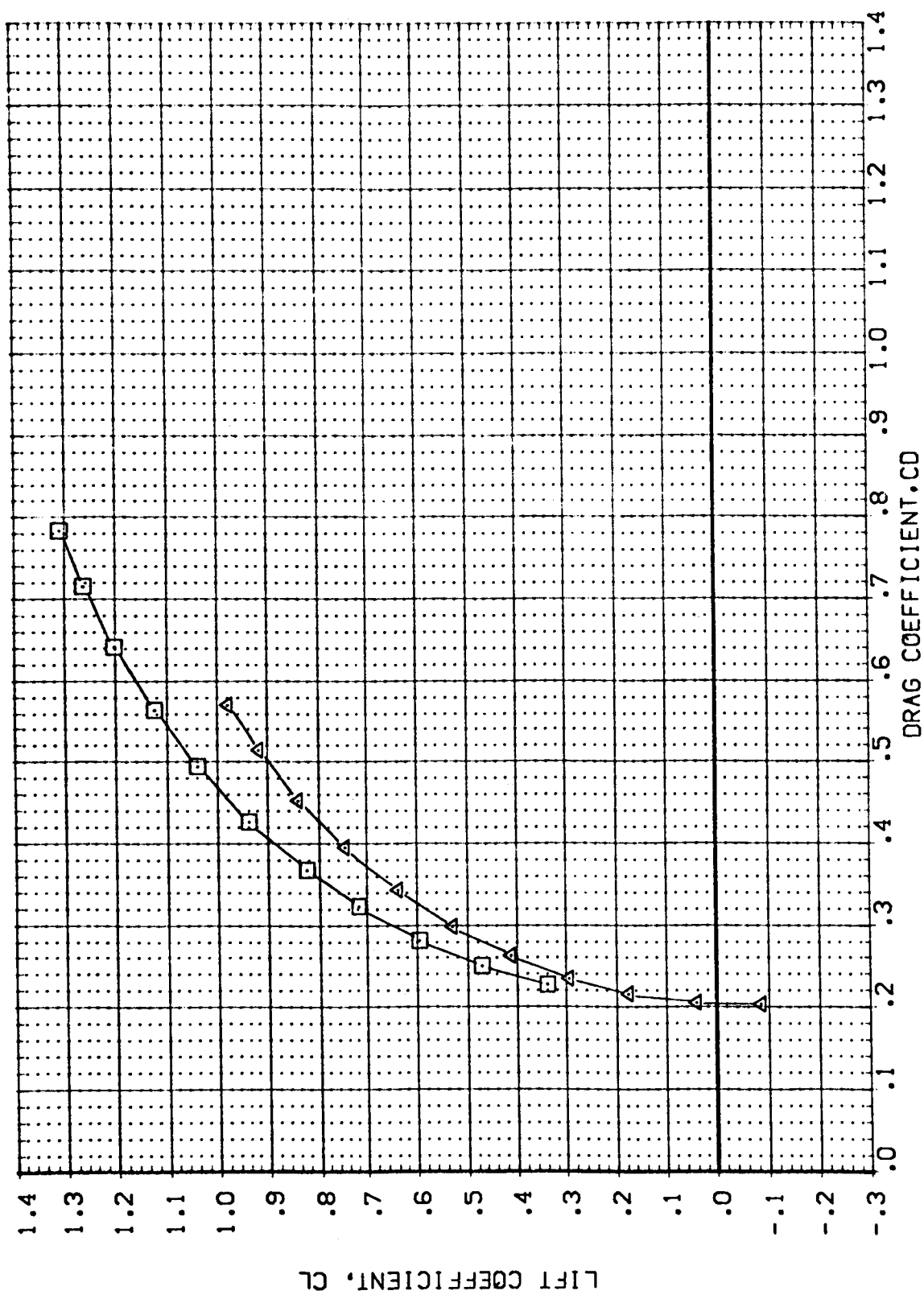


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = 1.20 PAGE 863

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOELAP	REFERENCE INFORMATION
{X87S66}	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
{F87S77}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
{F87S81}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
{F87S79}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

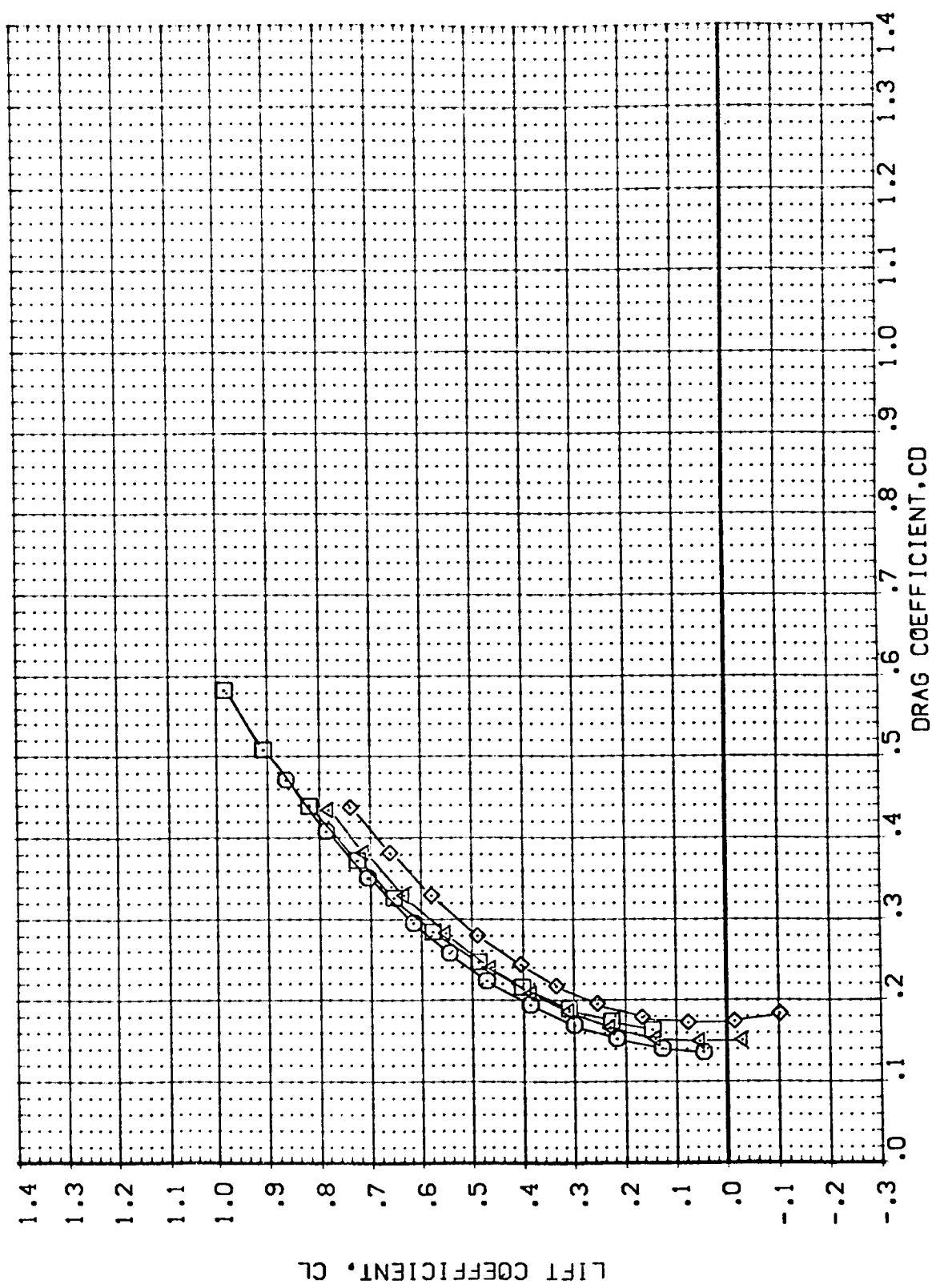


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CD)MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.750	BREF 936.7000
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 836.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

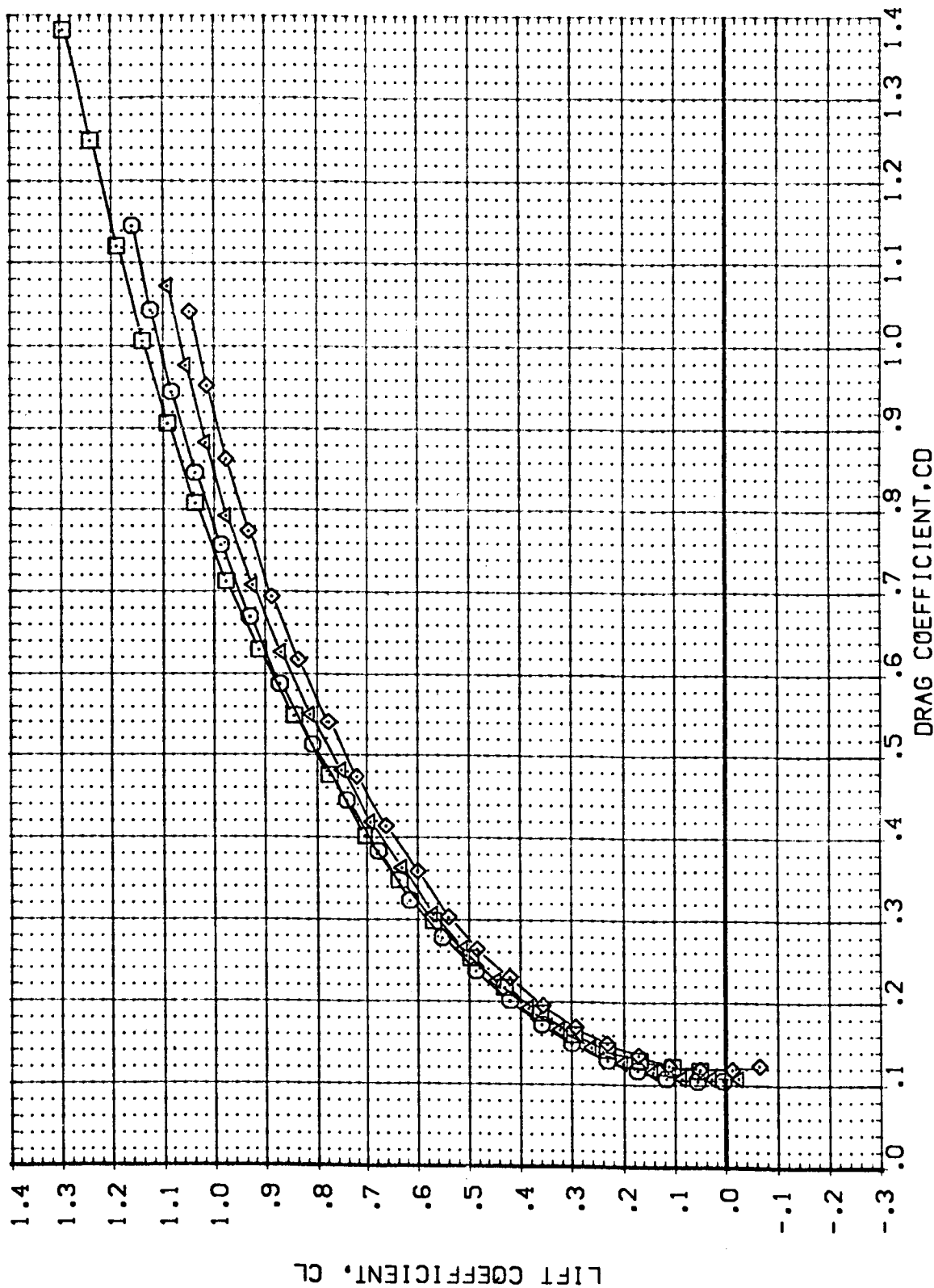


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
						ZMRP .0000 IN.
						SCALE .0040

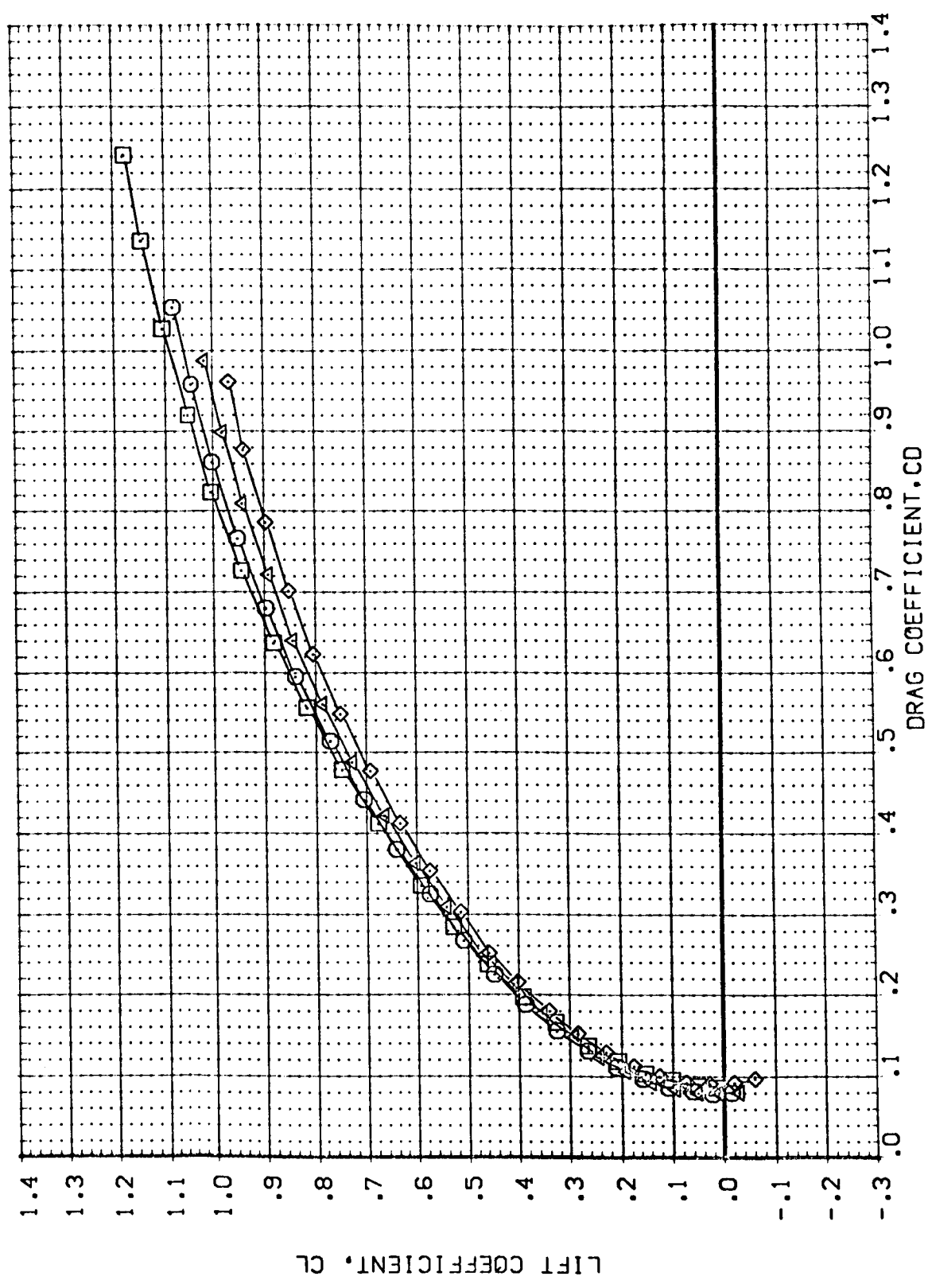


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
(F)MACH = 4.96 PAGE 866

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(GB7566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SG.F.T.
(GB7577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 N.
(GB7581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(GB7579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000 N.
						YMRP .0000
						ZMRP .0000
						SCALE .0040

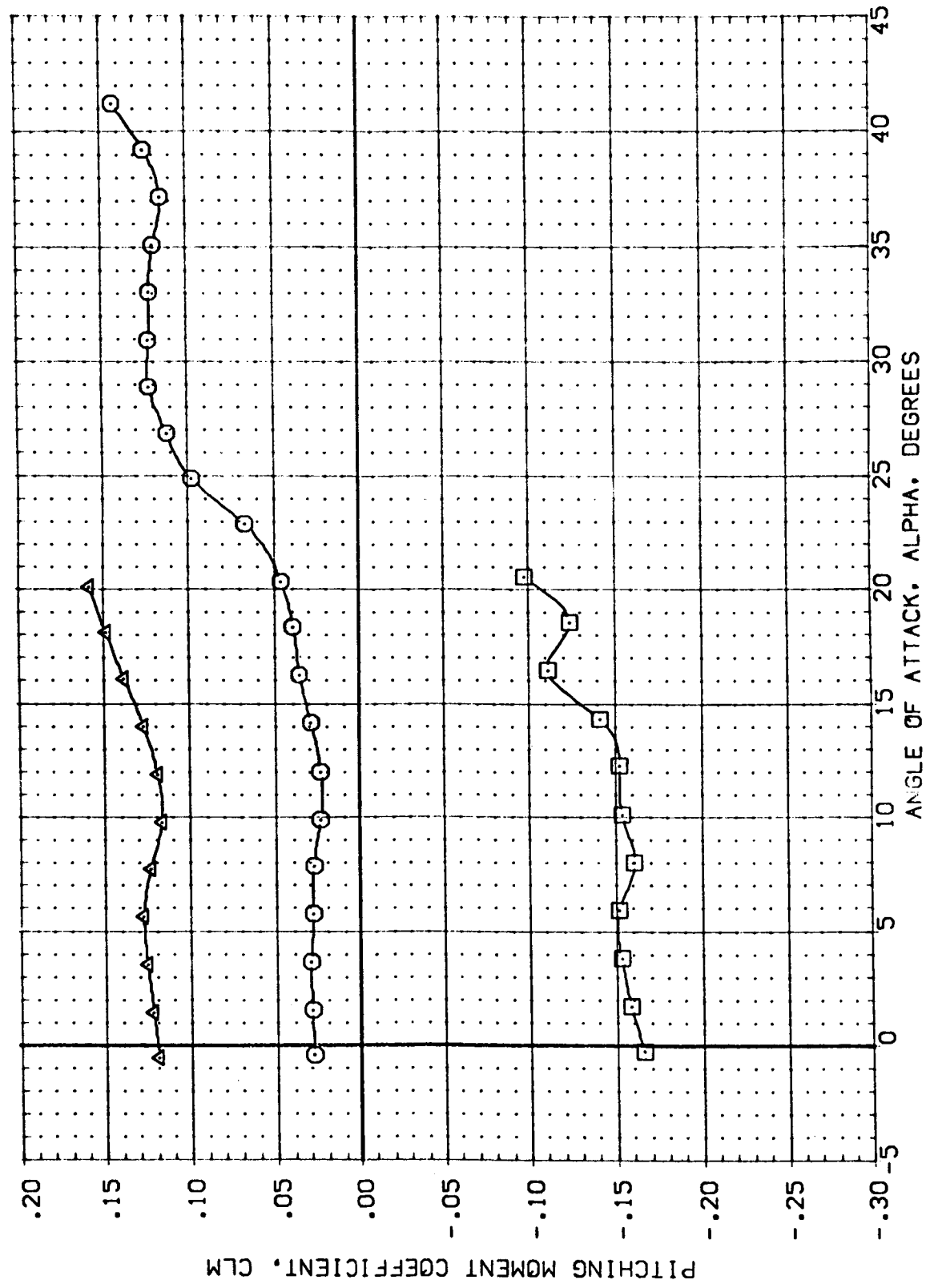


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

(A)MACH = .59

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(G87S66)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(G87S77)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(G87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(G87S79)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

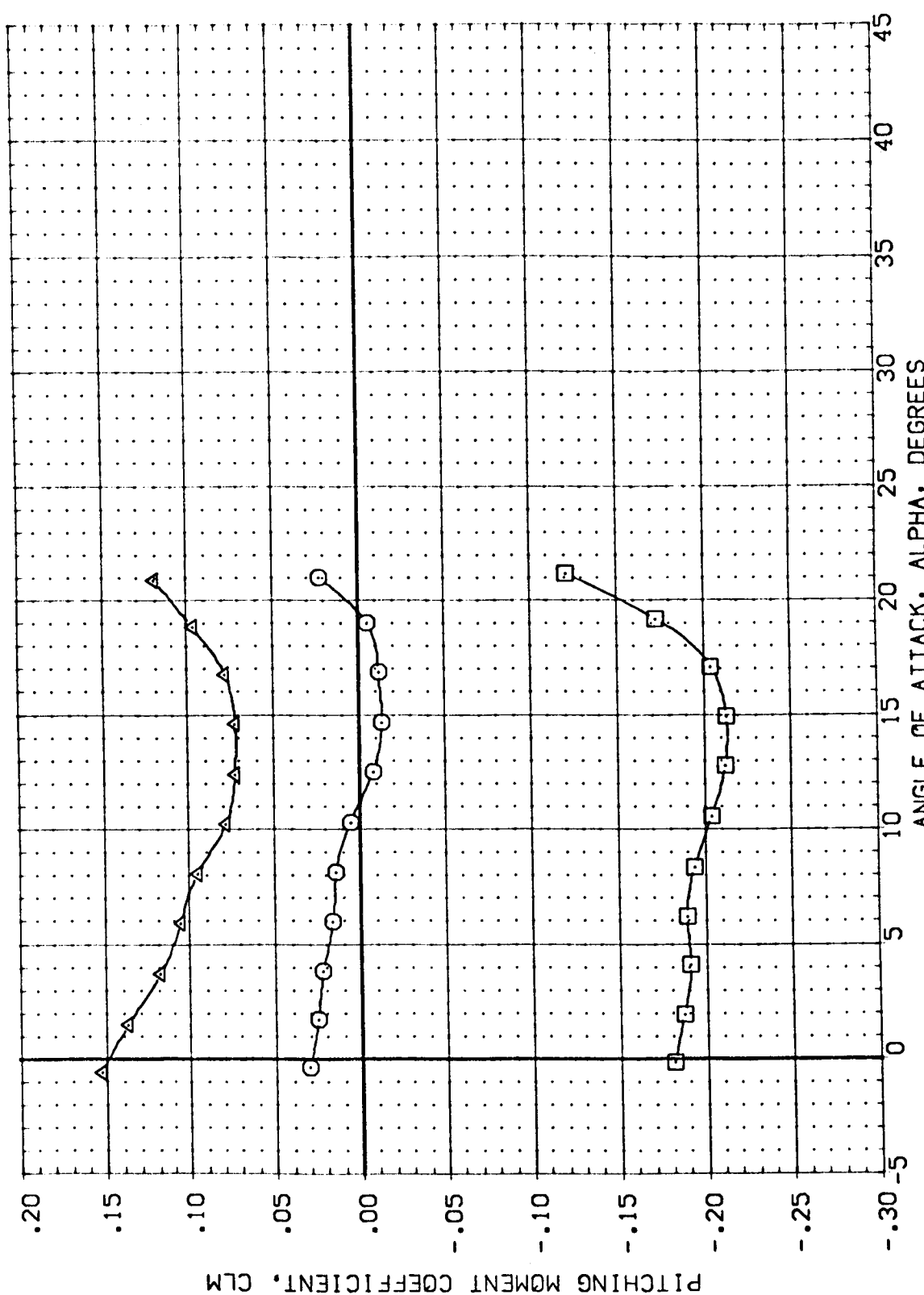


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

(B)MACH = .90

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87566)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(G87577)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(G87581)	DATA NOT AVAILABLE	.000	-40.000	999.980	-14.250	BREF 936.7000 IN.
(G87579)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

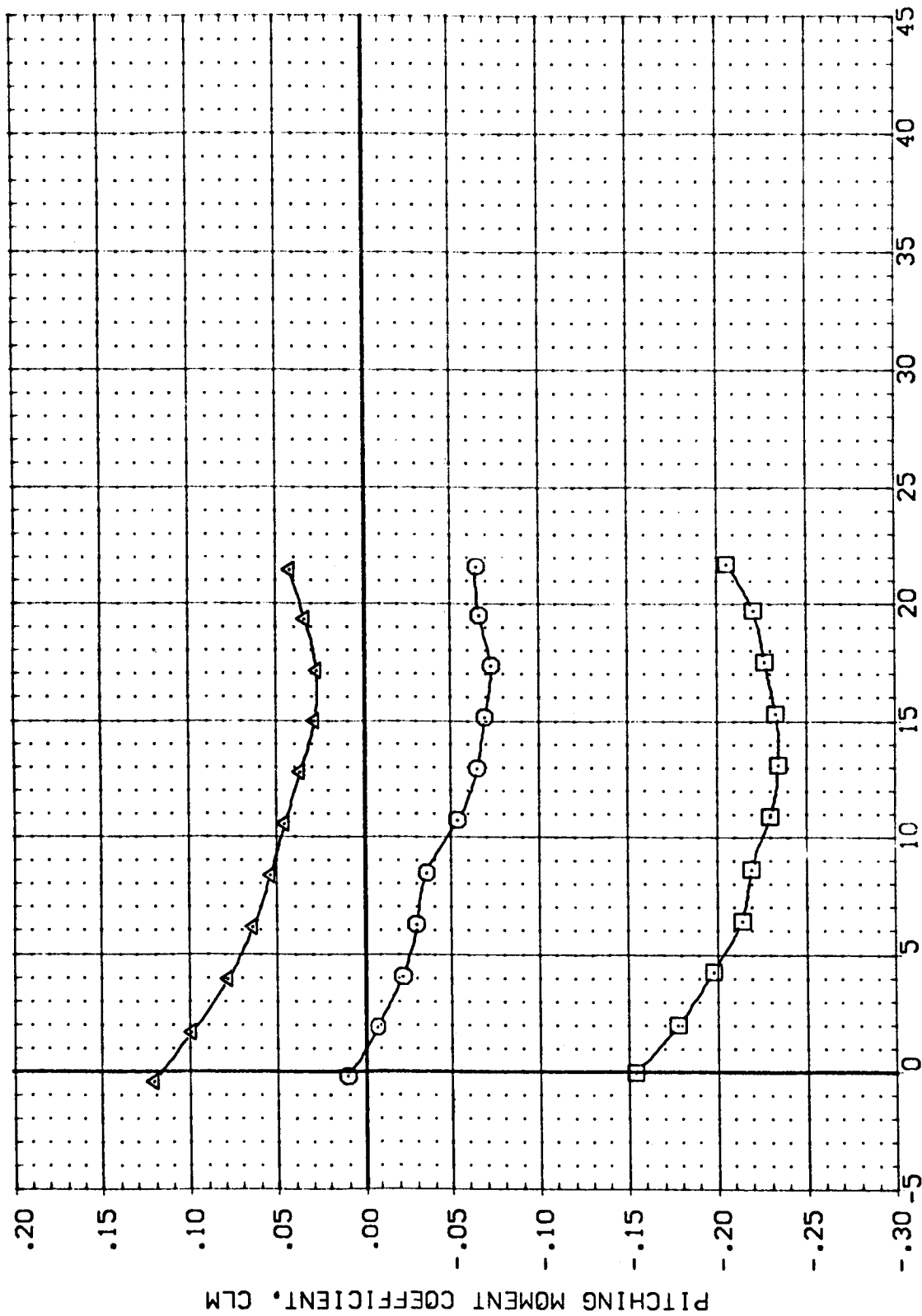


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION	SC.FT.
(G87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(G87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF	474.8000
(G87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF	936.7000
(G87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP	854.5000
						YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

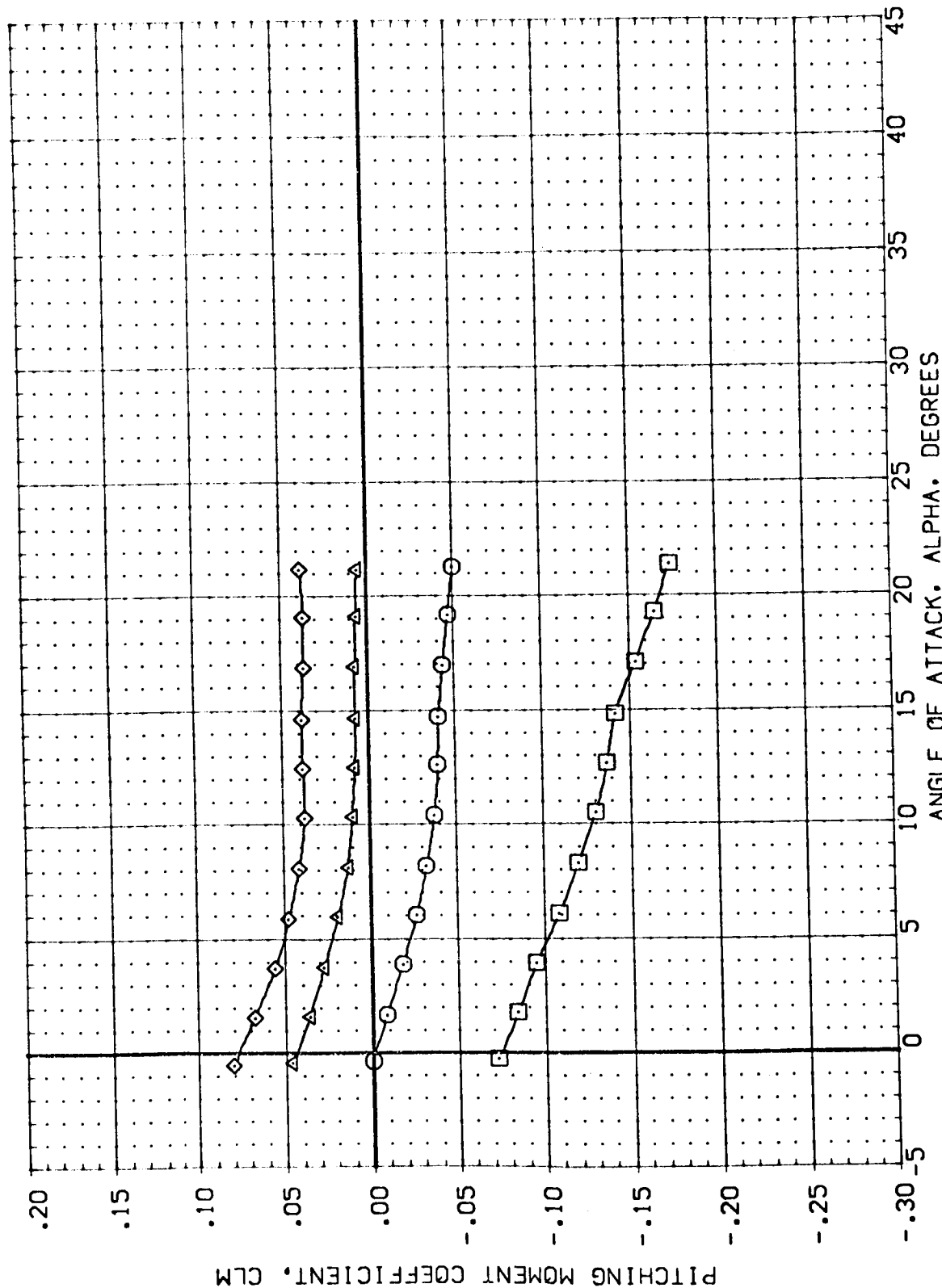


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

(D)MACH = 1.95

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SO.F.T.
(G87566)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(G87577)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LSRF	474.8000
(G87581)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BSRF	936.7000
(G87579)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRF	864.5000
						YMRF	.0000
						ZMRF	.0000
						SCALE	.0040

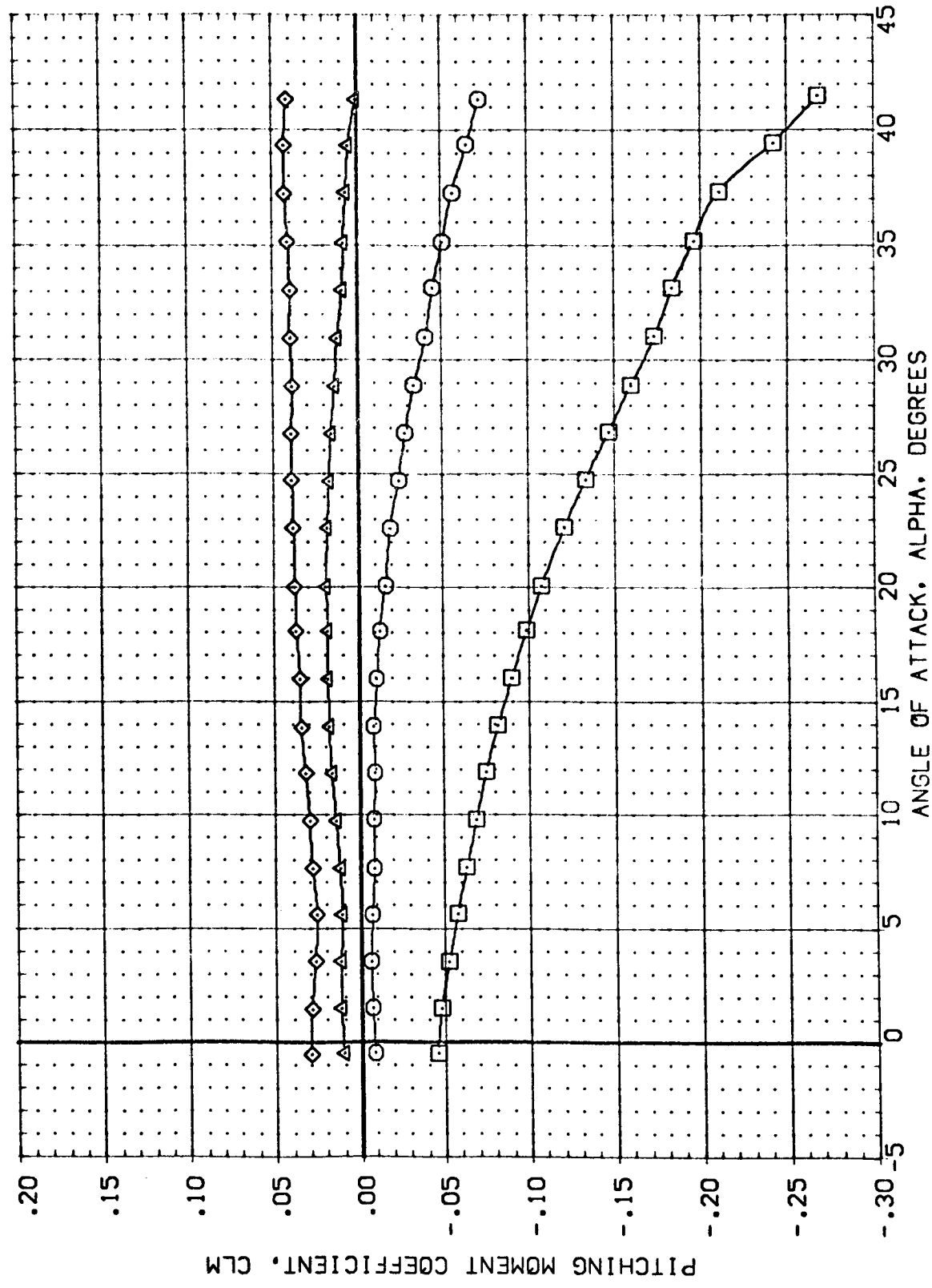


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87566)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(G87577)	MSFC 574(CA48) CR8 138 W/ALT NOSE	.000	.000	999.990	13.750	LREF 474.8000 IN.
(G87581)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	15.000	999.990	-14.250	BREF 936.7000 IN.
(G87579)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	-40.000	999.990	.000	XMRP 864.5000
		.000	-20.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

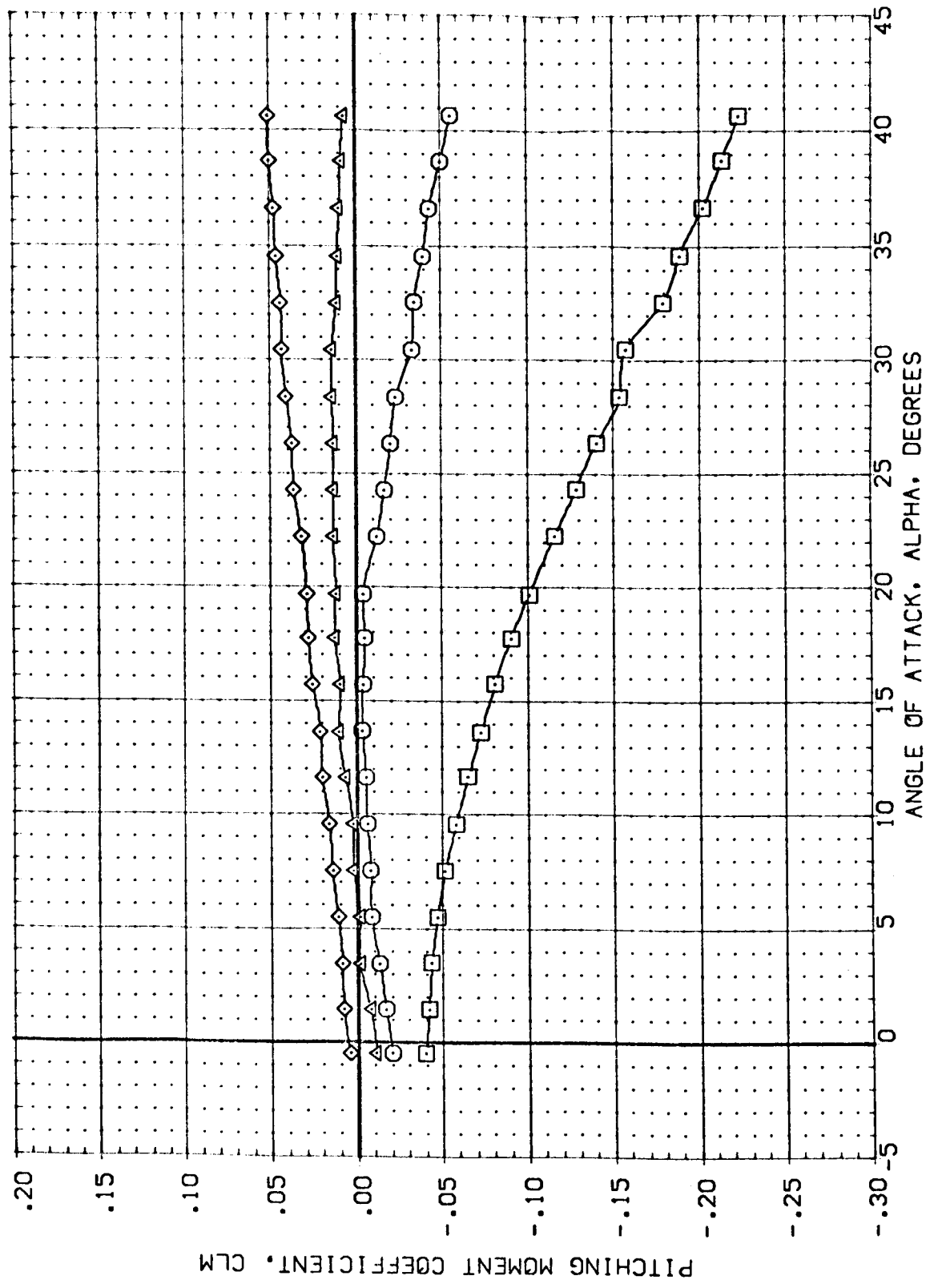


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 [187009] MSFC 574(0A48) CRB 139B
 [F87022] MSFC 574(0A48) CRB 139B
 [F87106] DATA NOT AVAILABLE
 [F87107] DATA NOT AVAILABLE

BETA ELEVTR SPOBRK SOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 53.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 N.
 .000 -40.000 999.990 -14.250 BREF 936.7000 N.
 .000 -40.000 999.990 -14.250 XREF 838.7000 N.
 .000 .000 .000 .000 YREF .0000 N.
 .000 .000 .000 .000 ZREF .0000 N.
 .000 .000 .000 .000 SCALE .0040

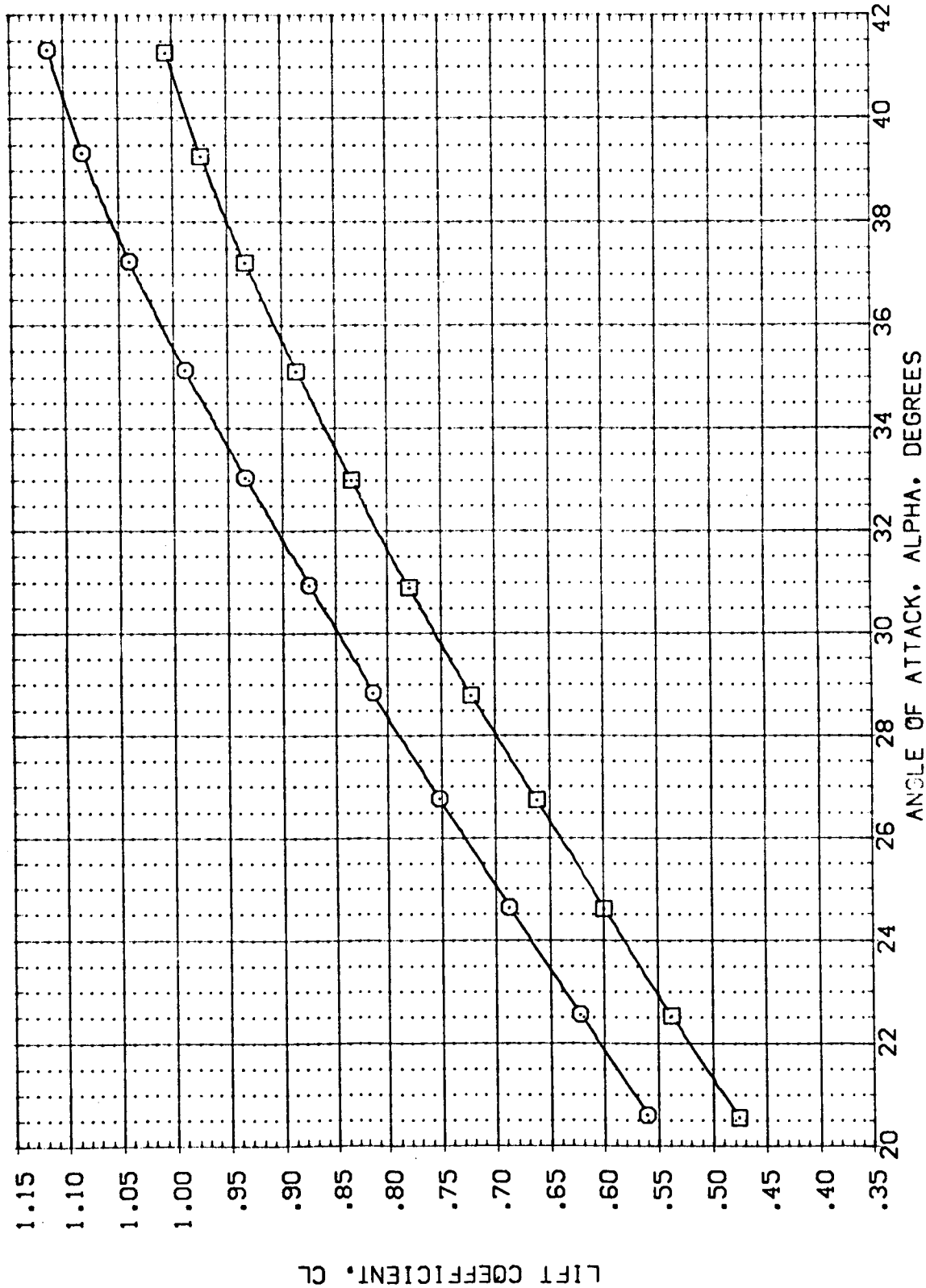


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A) MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE	INFORMATION
(187009)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF	2690.0000
(F87022)	MSFC 574(CA48) CRB 139B	.000	-10.000	999.990	-14.250	LREF	474.8000
(F87056)	MSFC 574(CA48) CRB 139B	.000	-10.000	999.990	-14.250	BREF	936.7000
(F87127)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	VMRP	838.7000
						ZMRP	.0000
						SCALE	.0040

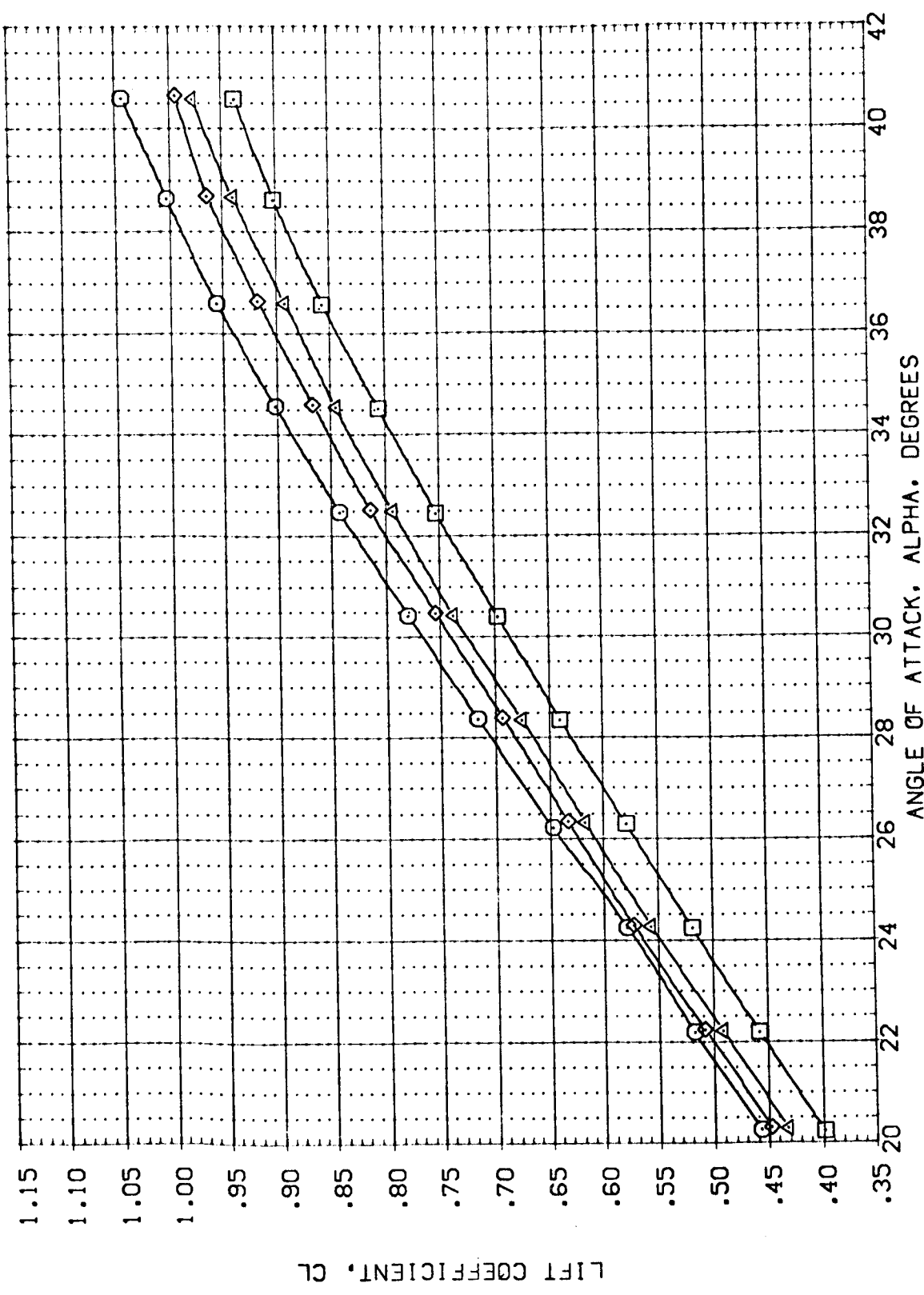


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SC.F.T.
.000	.000	999.990	.000	SREF	2690.0000
.000	-40.000	999.990	-14.250	LREF	474.8000
.000	-40.000	999.990	-14.250	BREF	936.7000
.000	-40.000	999.990	-14.250	XPRP	838.7000
.000	-40.000	999.990	.000	YPRP	.0000
.000	-40.000	999.990	ZPRP	.0000	.0000
.000	-40.000	999.990	SCALE	.0040	.0040

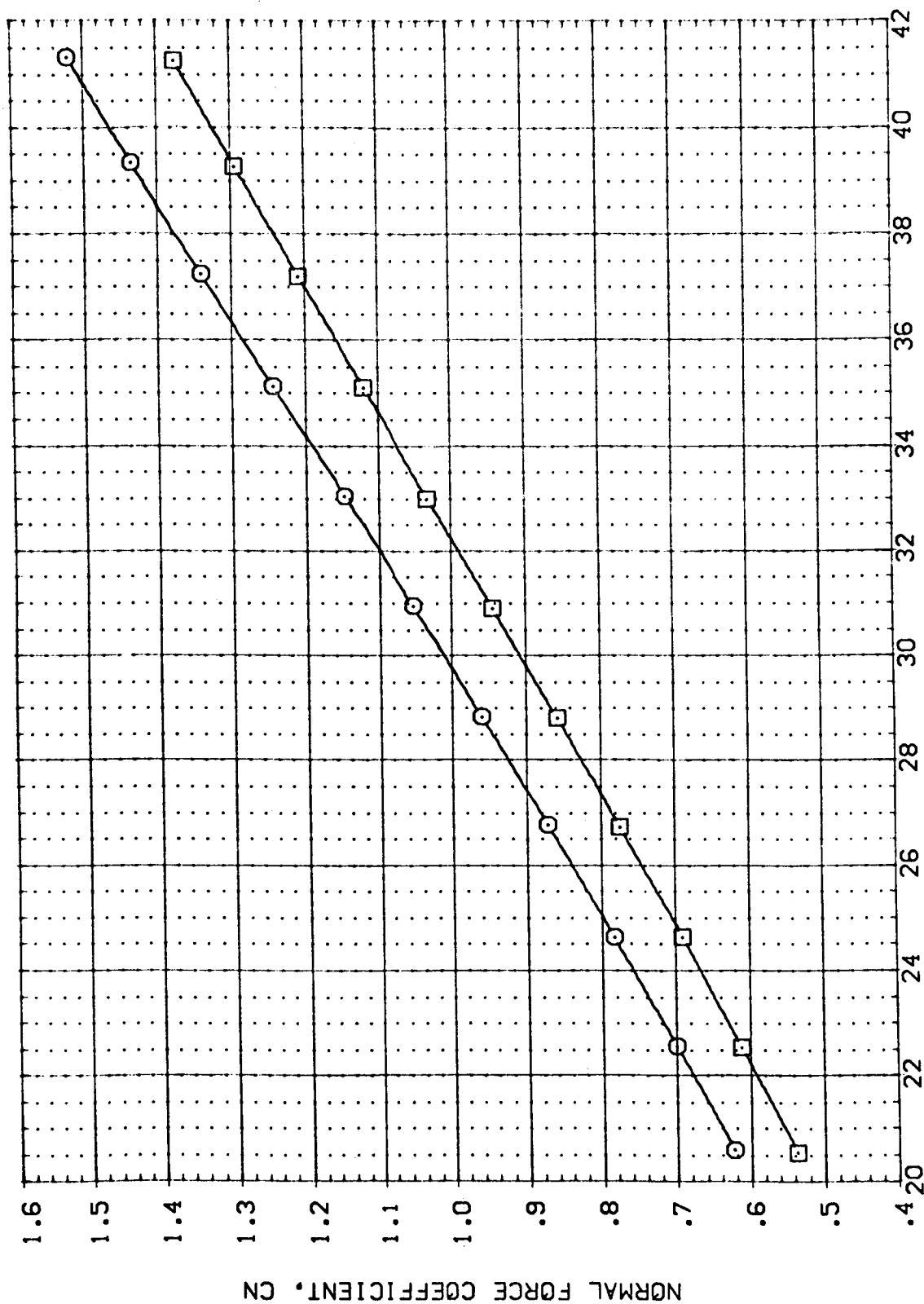


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

$$CACH = 2.99$$

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009) MSFC 574(CA48) CR3 1398

(F87022) MSFC 574(CA48) CR3 1398

(F87106) MSFC 574(CA48) CR3 1398 W/H19

(F87107) MSFC 574(CA48) CR3 1398 W/H20

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SQ.FT. N.

.000 -40.000 999.990 -14.250 LREF 474.8000 N.

.000 -40.000 999.990 -14.250 BRFF 936.7000 N.

.000 -40.000 999.990 -14.250 XMRP 838.7000 N.

.000 .000 .000 .000 YMRP .0000 N.

.000 .000 .000 .000 ZMRP .0000 N.

SCALE .0010

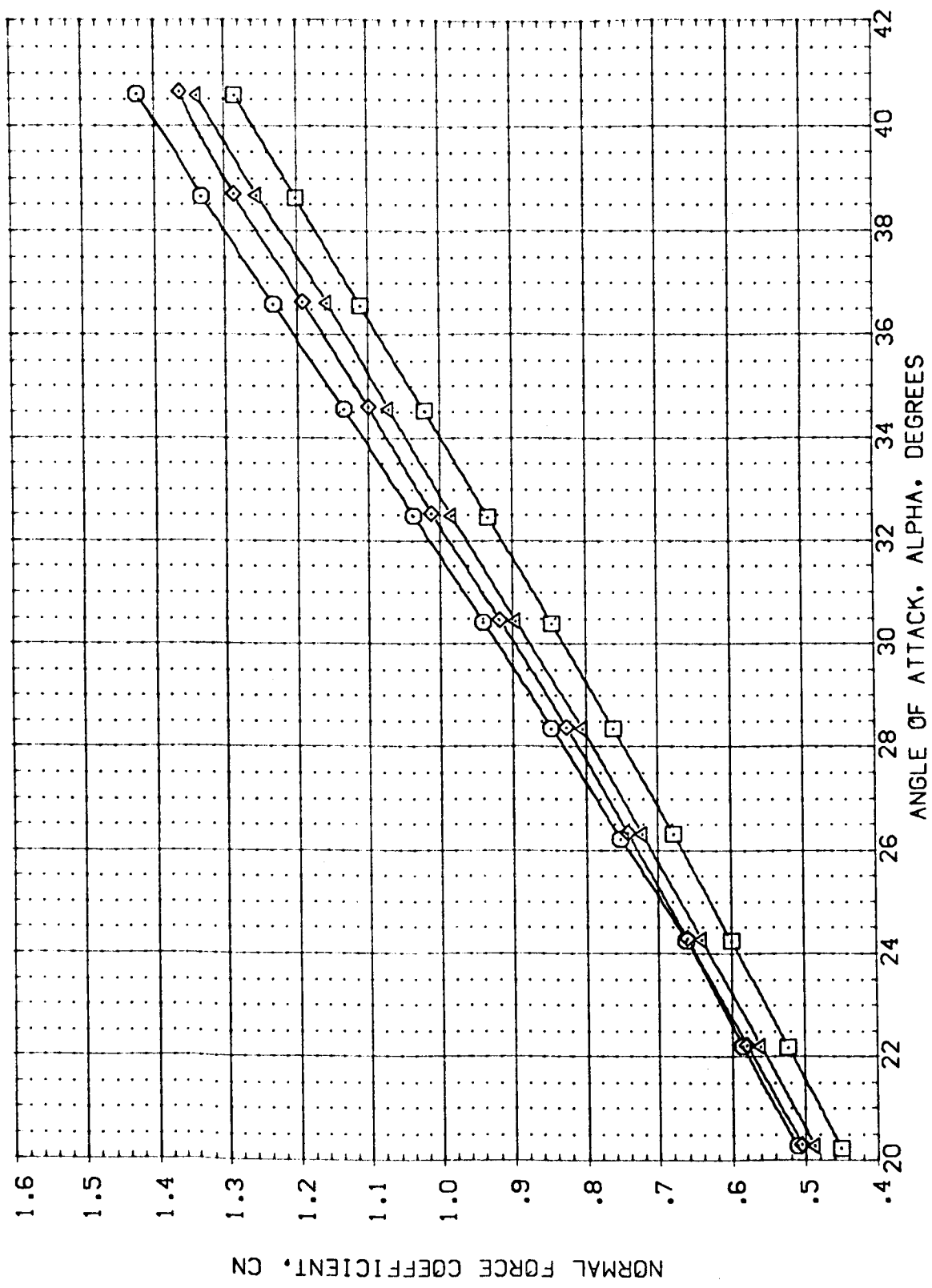


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(OA48) ORB 1398
 (F87022) MSFC 574(OA48) ORB 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPORBK BOFLAP
 .000 .000 999.990 .000
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

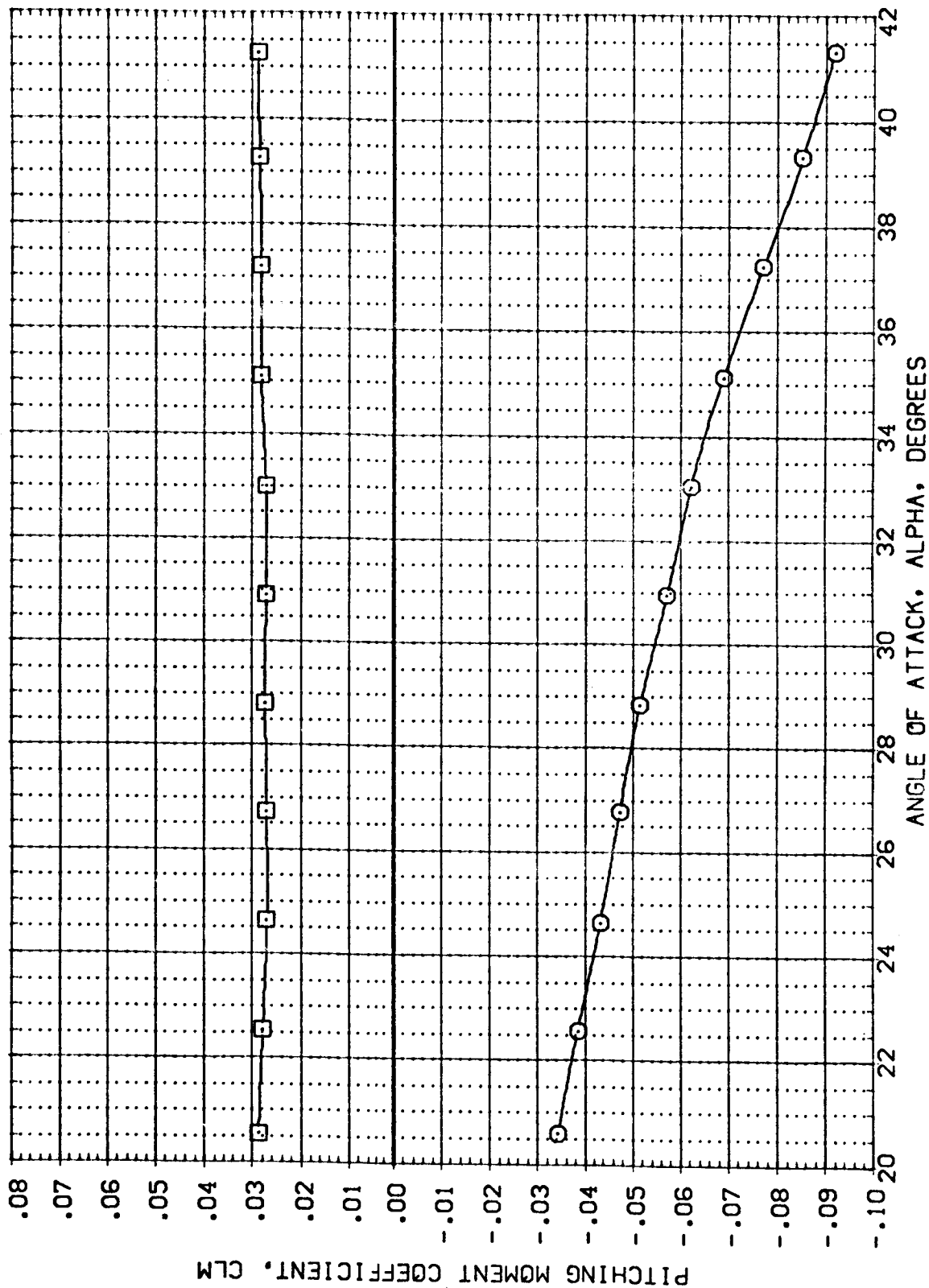


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009) MSFC 574 (0A48) ORB 1398

(187022) MSFC 574 (0A48) ORB 1398

(187035) MSFC 574 (0A48) ORB 1398

(187107) MSFC 574 (0A48) ORB 1398

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 -40.000 999.990 -14.250

.000 -40.000 999.990 -14.250

.000 -40.000 999.990 -14.250

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000

ZMRP .0000

SCALE .0040

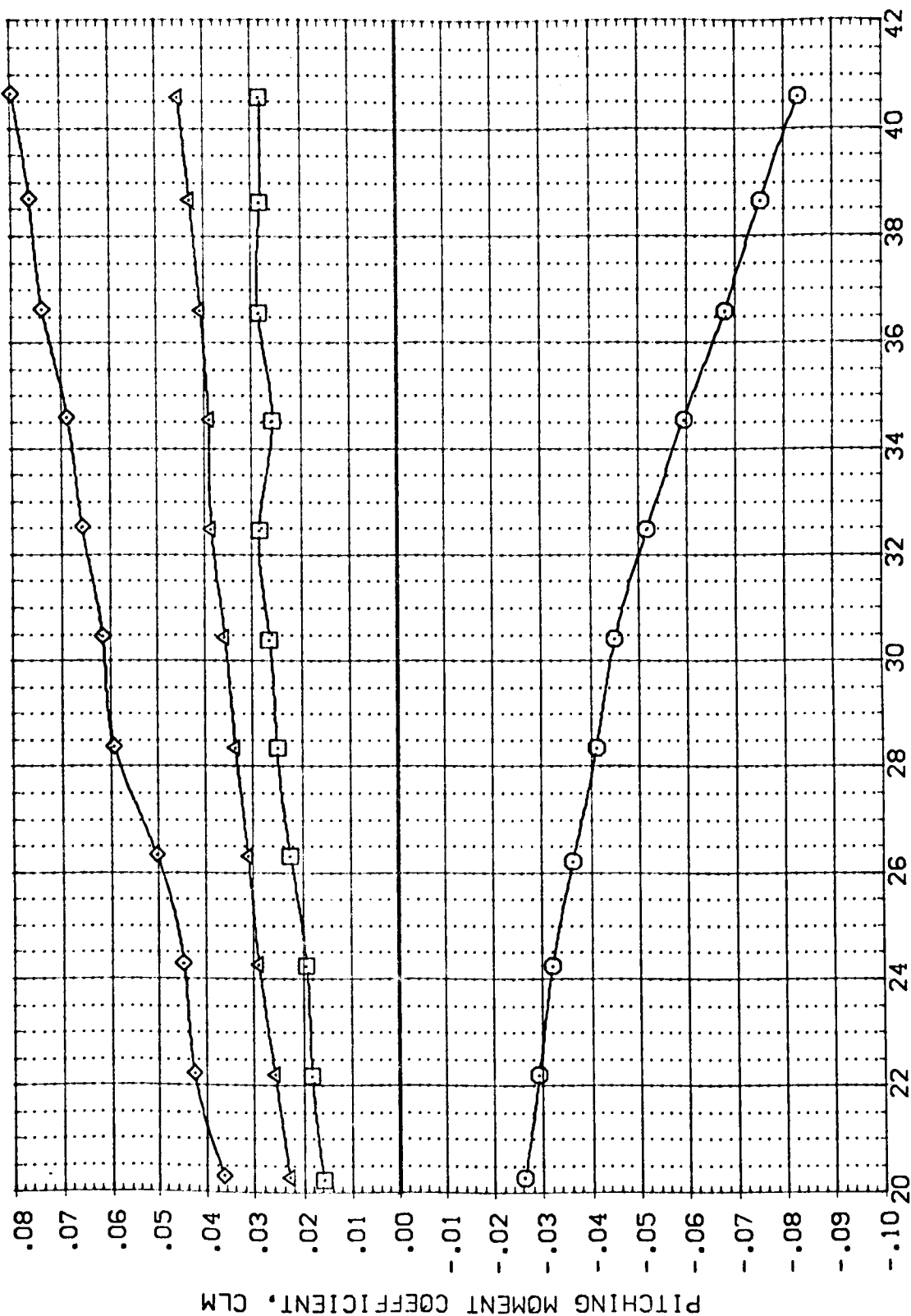


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) ORB 1398
 (F87022) MSFC 574(CA48) ORB 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 -40.000 999.990 -14.250 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -40.000 999.990 -14.250 XMRP 838.7000 IN.
 .000 .0000 .0000 ZMRP .0000 IN.
 .0040 SCALE

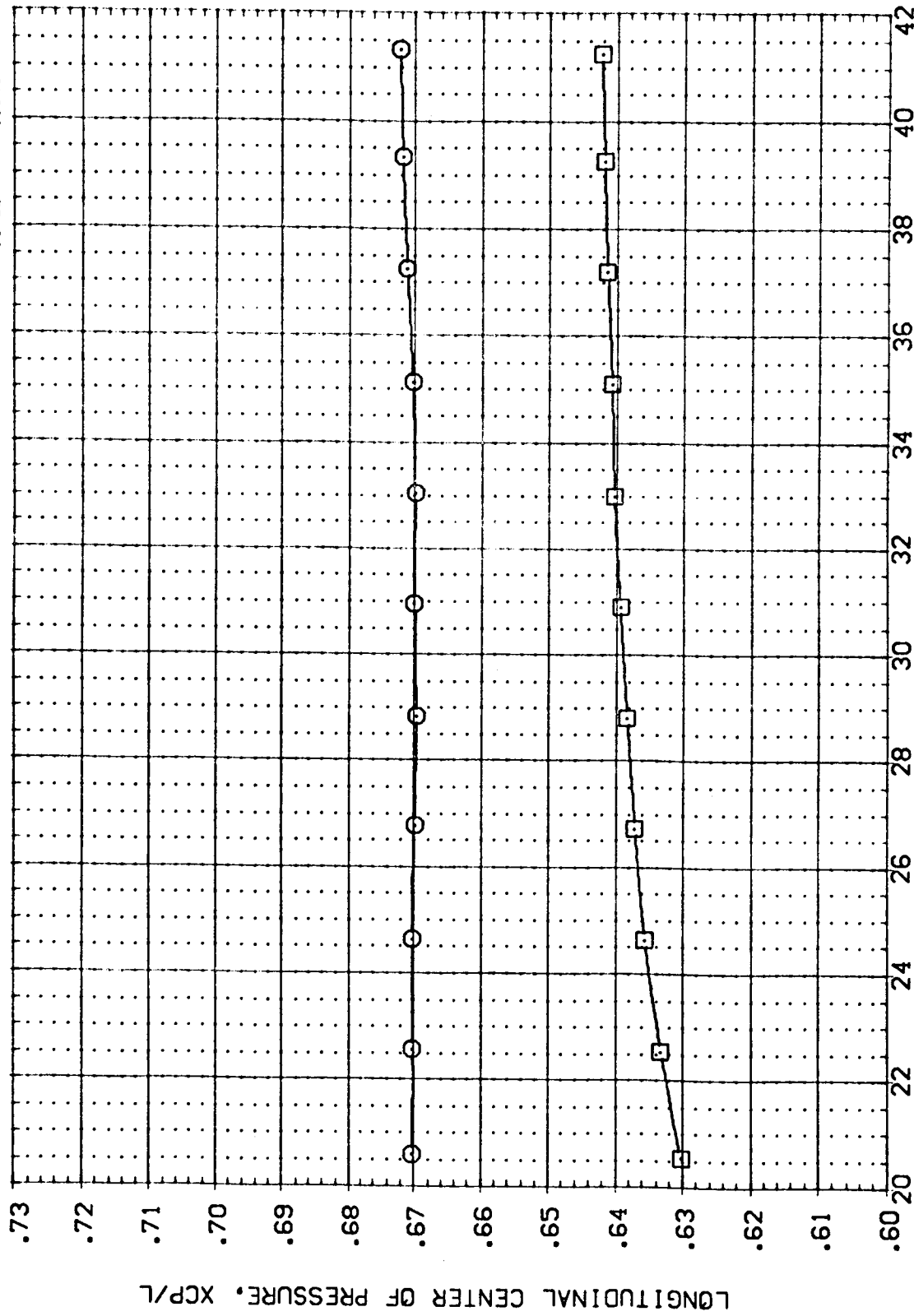


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) ORB 1398
 (F87032) MSFC 574(CA48) ORB 1398
 (F87156) MSFC 574(CA48) ORB 1398 V/H19
 (F87107) MSFC 574(CA48) ORB 1398 V/H20

BETA ELEVTR SPDRBK BOFLAP REFERENCE INFORMATION SC.F.T.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 -40.000 999.990 -14.250 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -40.000 999.990 -14.250 XMRP 838.7000
 .000 .0000 ZMRP .0000
 .000 .0000 SCALE .0040

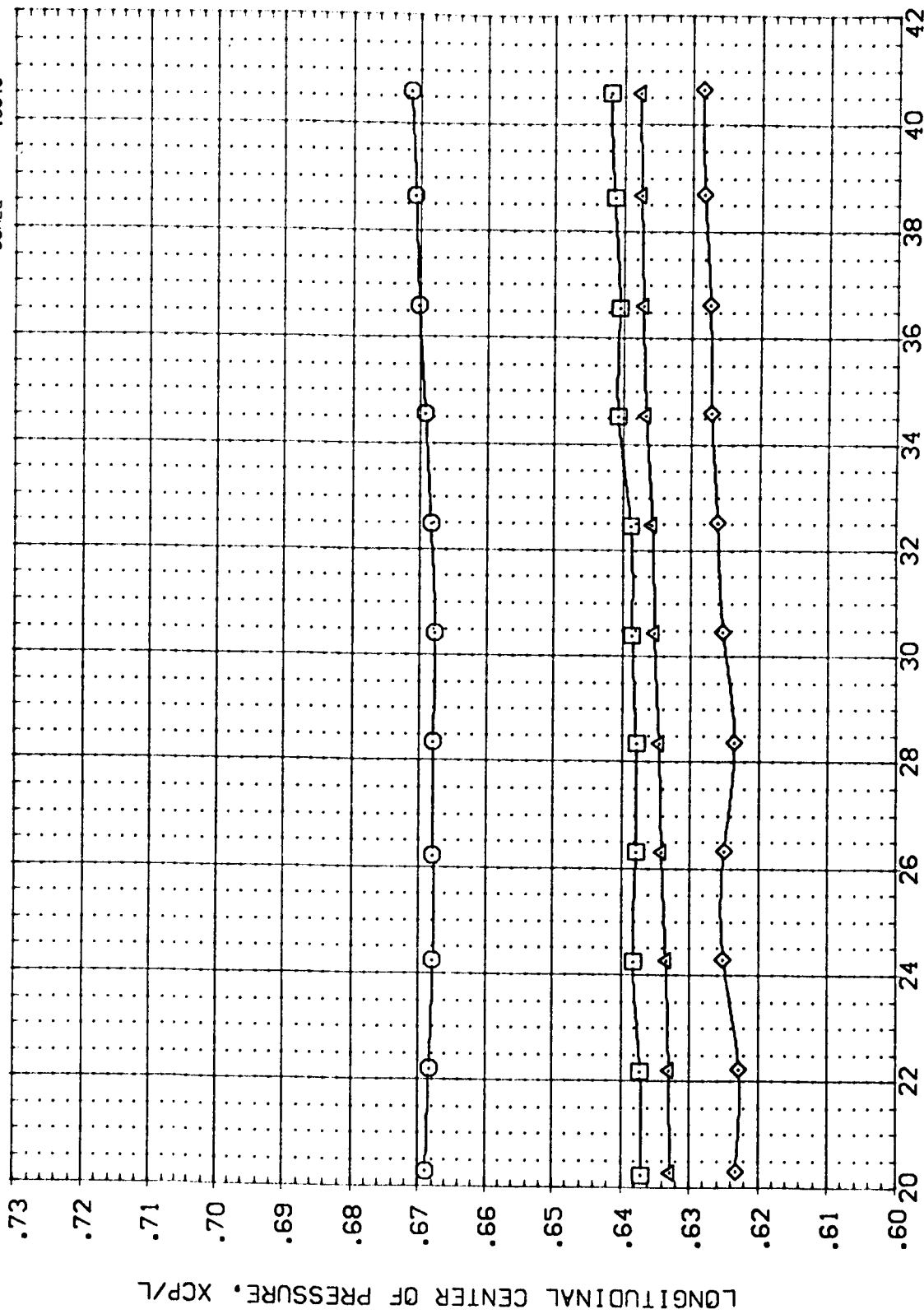


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87022)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	LREF 474.8000
(F87106)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87107)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	YMRP 838.7000
						ZMRP .0000
						SCALE .0040

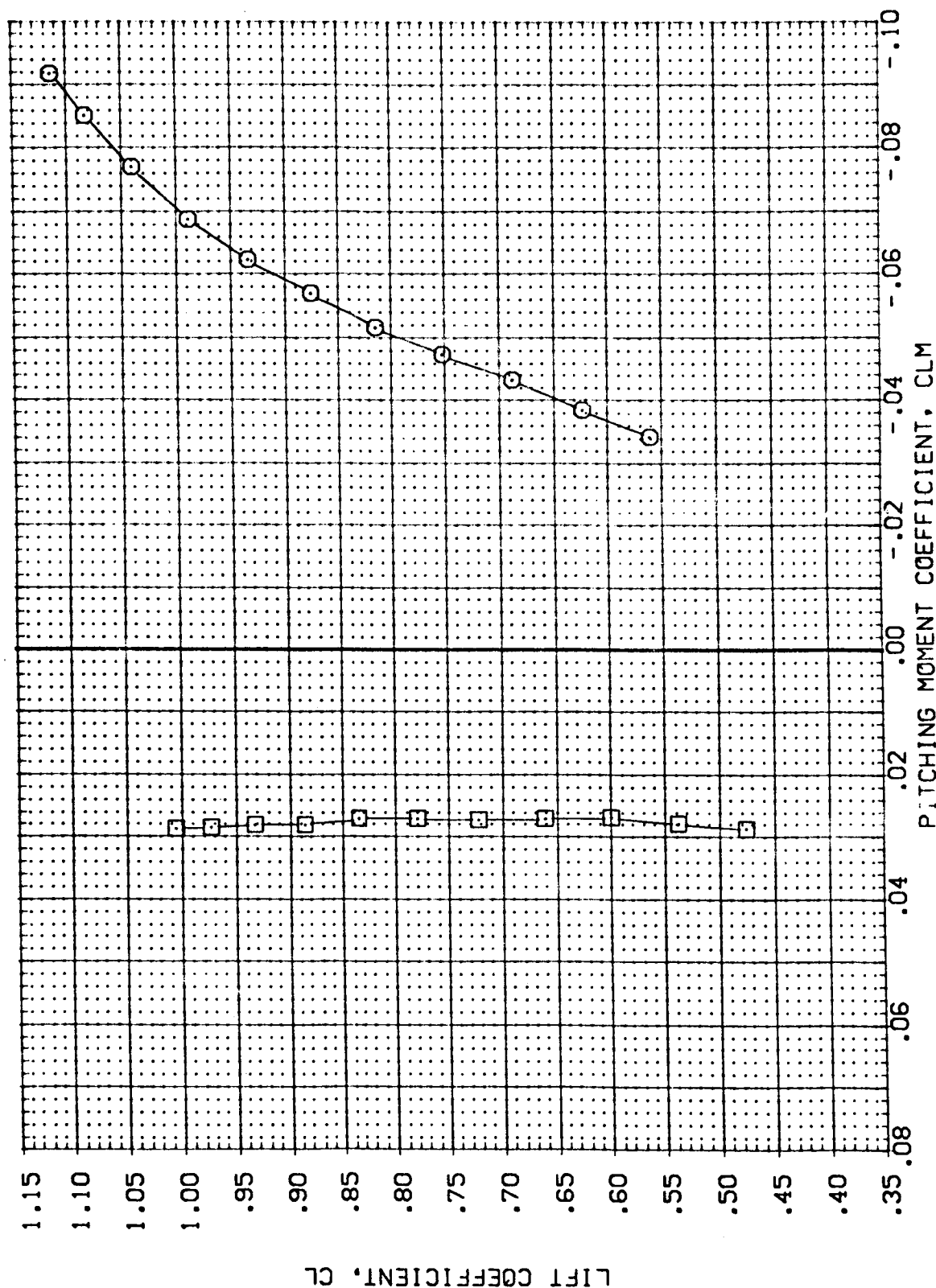


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187C09) MSFC 574(CA48) CRB 139B
 (F87C22) MSFC 574(CA48) CRB 139B
 (F87C06) MSFC 574(CA48) CRB 139B W/H19
 (F87C07) MSFC 574(CA48) CRB 139B W/H20

BETA ELEVTR SPDBRK BOELAP
 .000 .000 999.990 .000
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XREF 838.7000 IN.
 YREF .0000 IN.
 ZREF .0000 IN.
 SCALE .0040

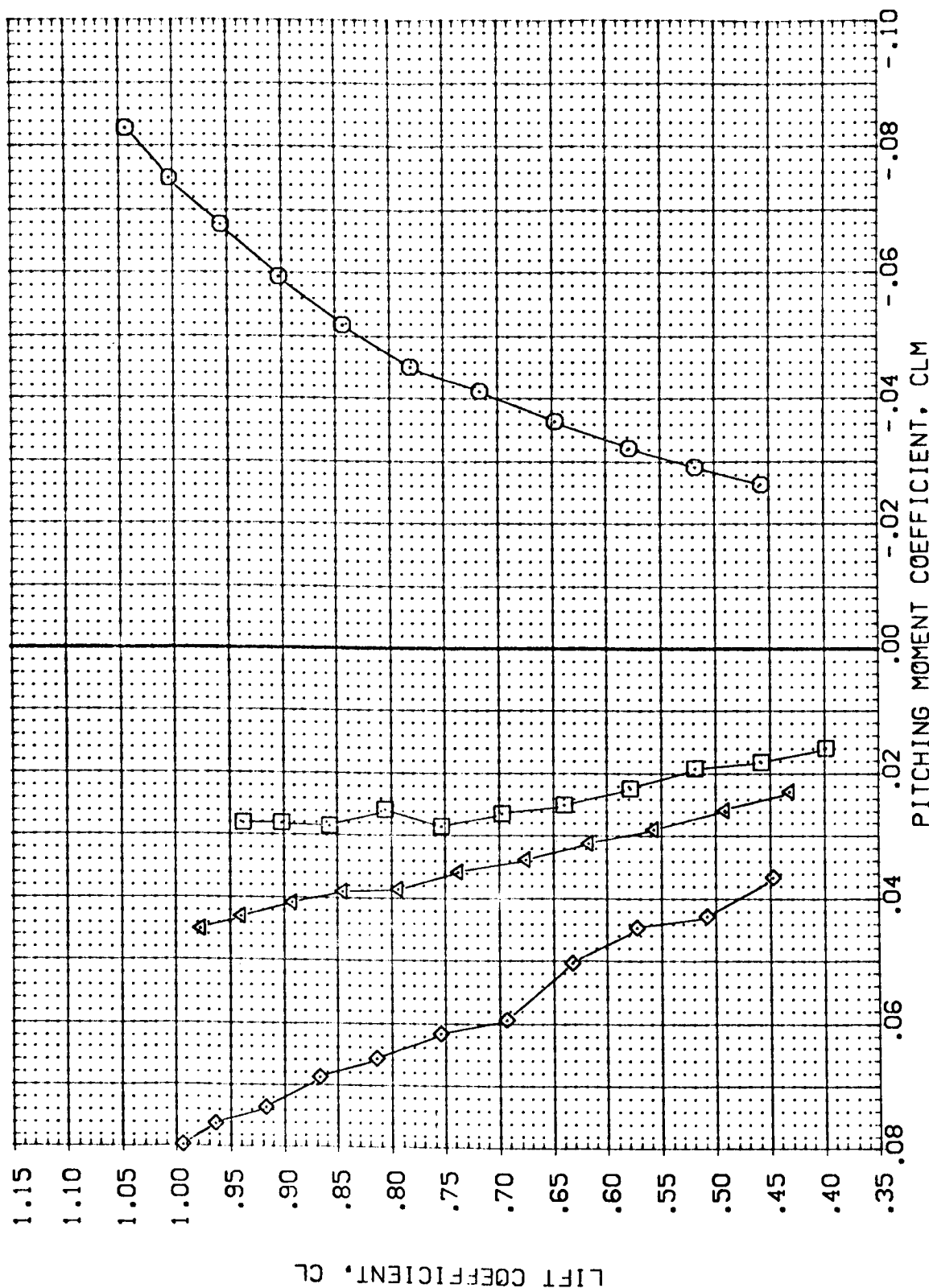


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL
 {187009}
 {F87022}
 {F87106}
 {F87107}

CONFIGURATION DESCRIPTION
 MSEC 574(OA48) ORB 1393
 MSEC 574(OA48) ORB 1393
 DATA NOT AVAILABLE
 DATA NOT AVAILABLE

BETA
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 .000
 .000
 .000
 .000

SPOBRK
 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

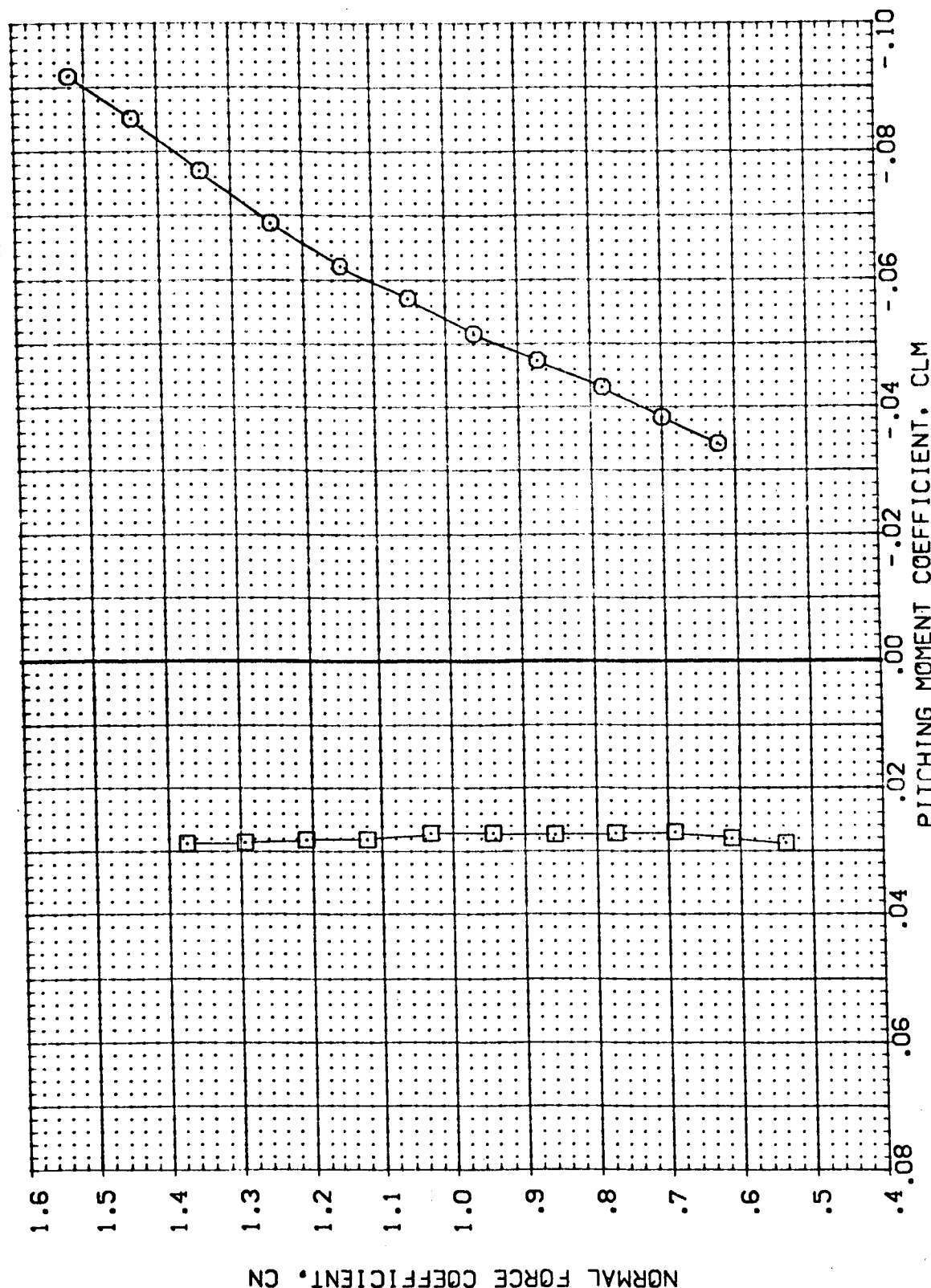


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87022)	MSFC 574(OA48) CRB 1398	.000	-10.000	999.990	-14.250	LREF 474.8000 IN.
(F87126)	MSFC 574(OA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87107)	MSFC 574(OA48) CRB 1398	.000	-40.000	999.990	-14.250	XMRD 838.7000 IN.
						YMRD .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

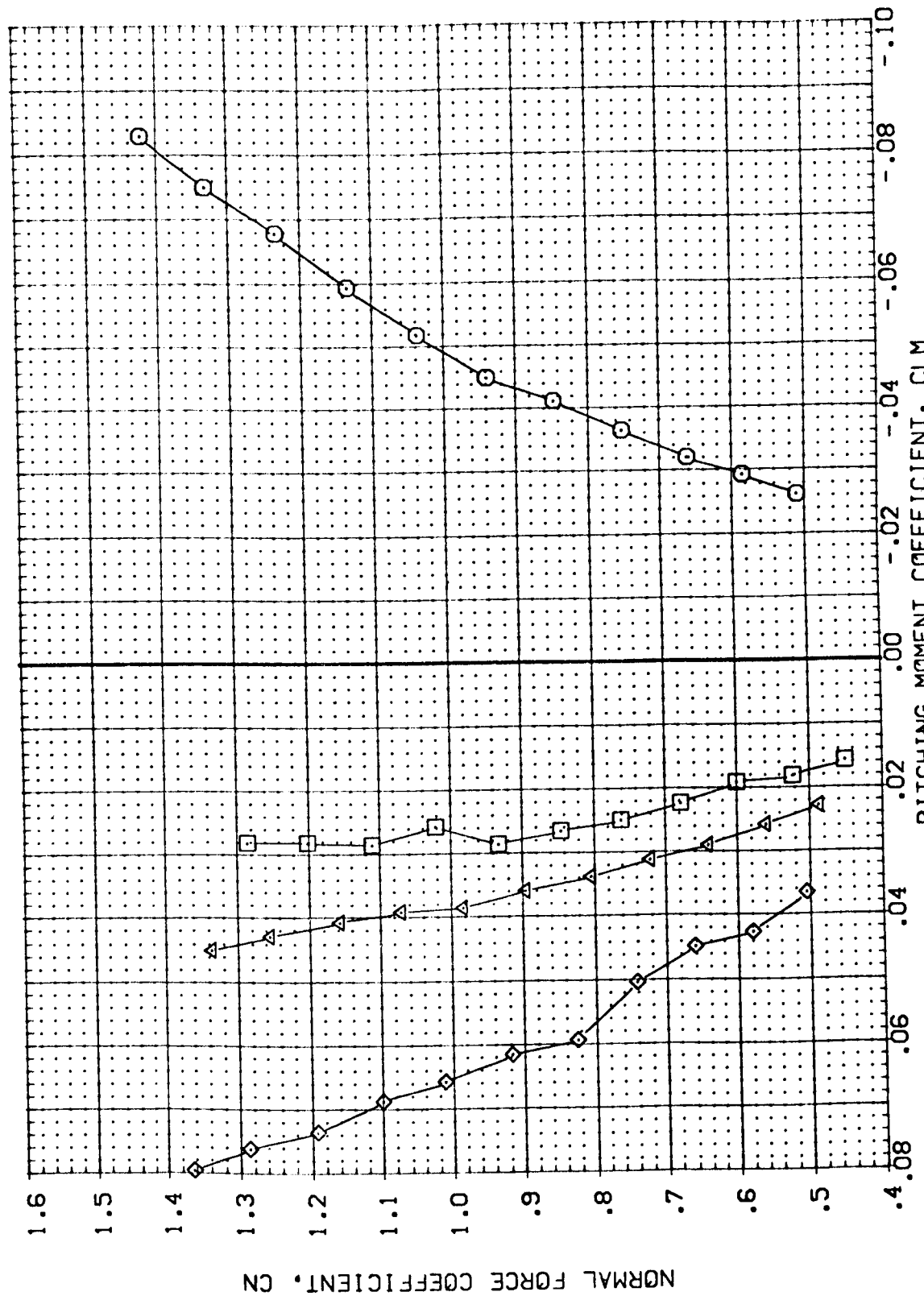


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B
 (B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87022)	MSFC 574(CA48) ORB 139B	.000	-40.000	999.990	-14.250	LREF 474.8000 IN.
(F87136)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87137)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	XMRP 838.7000 IN.
						YMRP .0000
						ZMRP .0000
						SCALE .0040

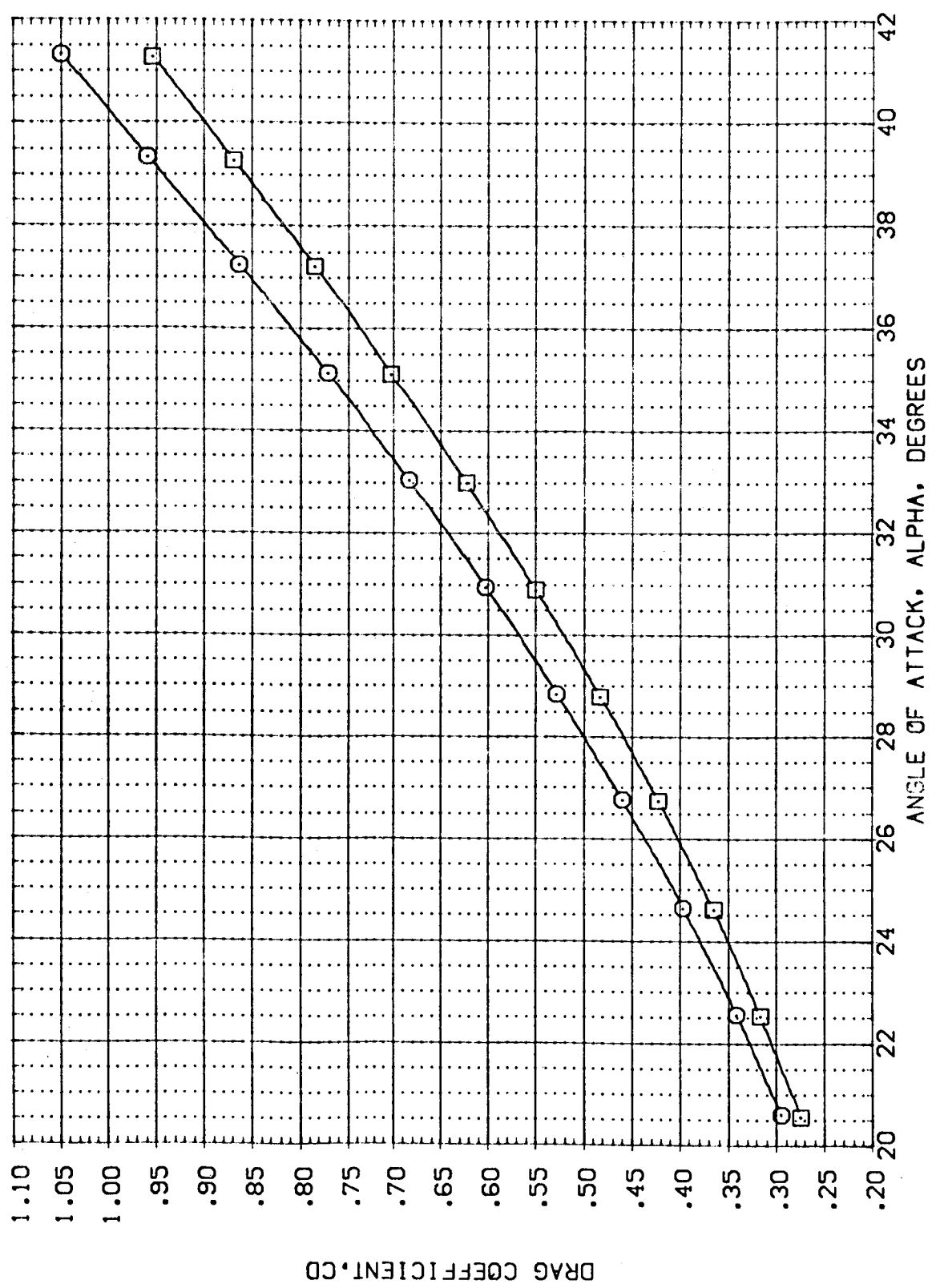


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(CA48) CRB 398	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87022)	MSFC 574(CA48) CRB 398	.000	-40.000	999.990	-14.250	LREF 474.8000 N.
(F87036)	MSFC 574(CA48) CRB 398	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87107)	MSFC 574(CA48) CRB 398	.000	-40.000	999.990	-14.250	XREF 838.7000 N.
						YREF .0000 N.
						ZREF .0000 N.
						SCALE .0040

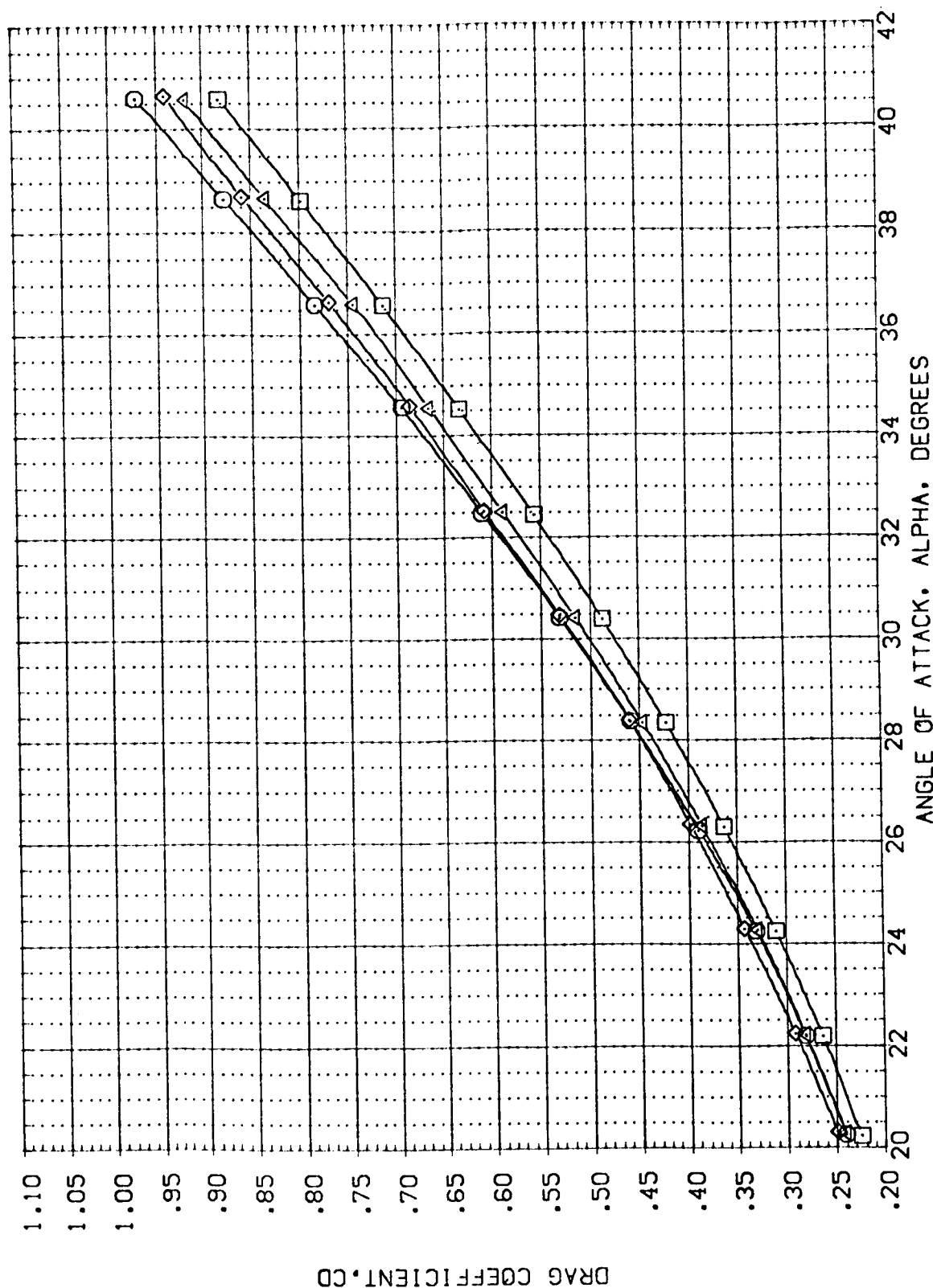
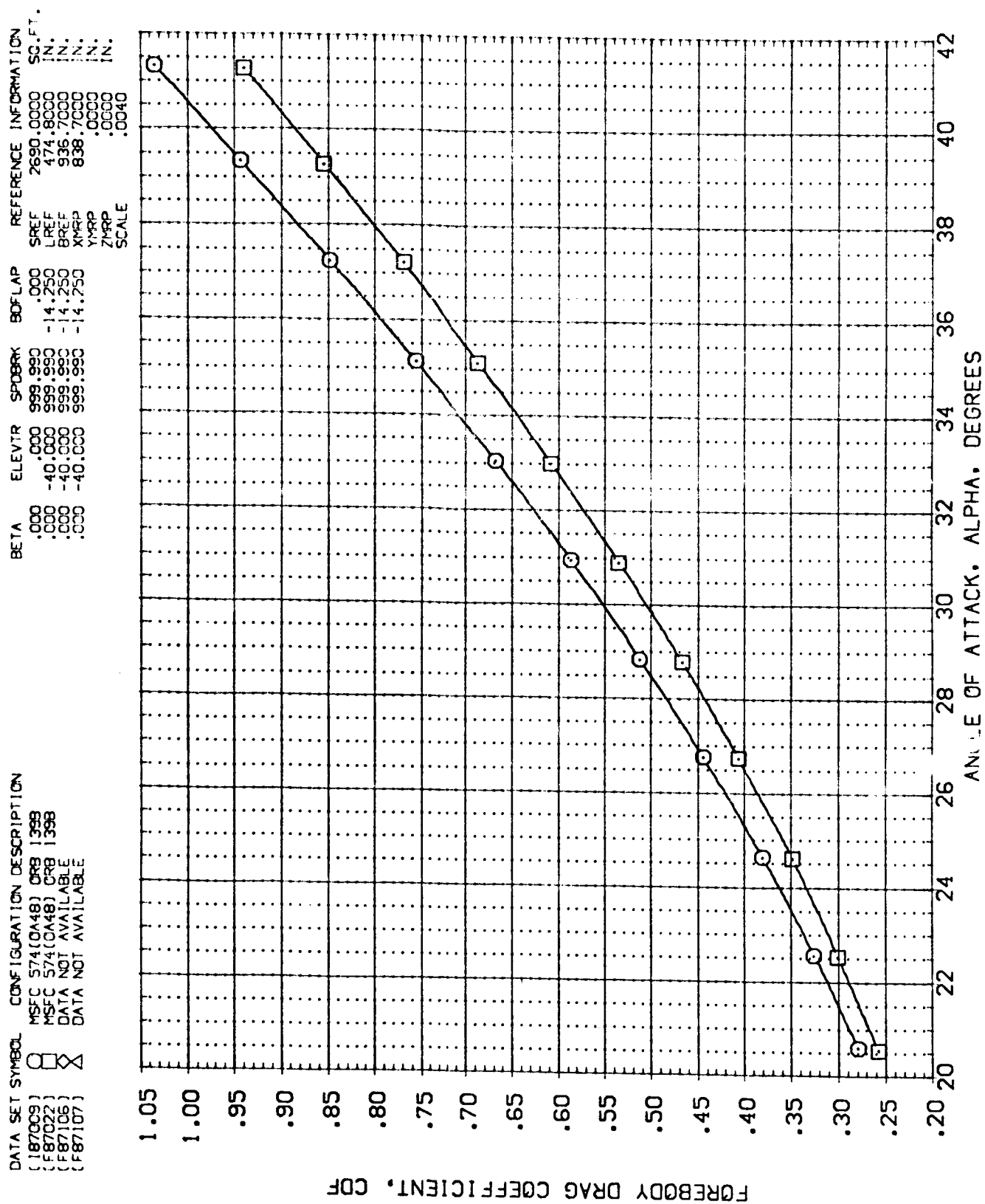


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96


$$[A]_{\text{MACH}} = 2.99$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	50.FT.
(187009)	MSFC 574(OA48) CR8 1398	.000	.000	999.990	.000	SREF	2690.0000
(187022)	MSFC 574(OA48) CR8 1398	.000	-40.000	999.990	-14.250	LREF	474.8000
(F87106)	MSFC 574(OA48) CR8 1398	.000	-40.000	999.990	-14.250	BREF	936.7000
(F87107)	MSFC 574(OA48) CR8 1398	.000	-40.000	999.990	-14.250	XMRP	838.7000
						YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

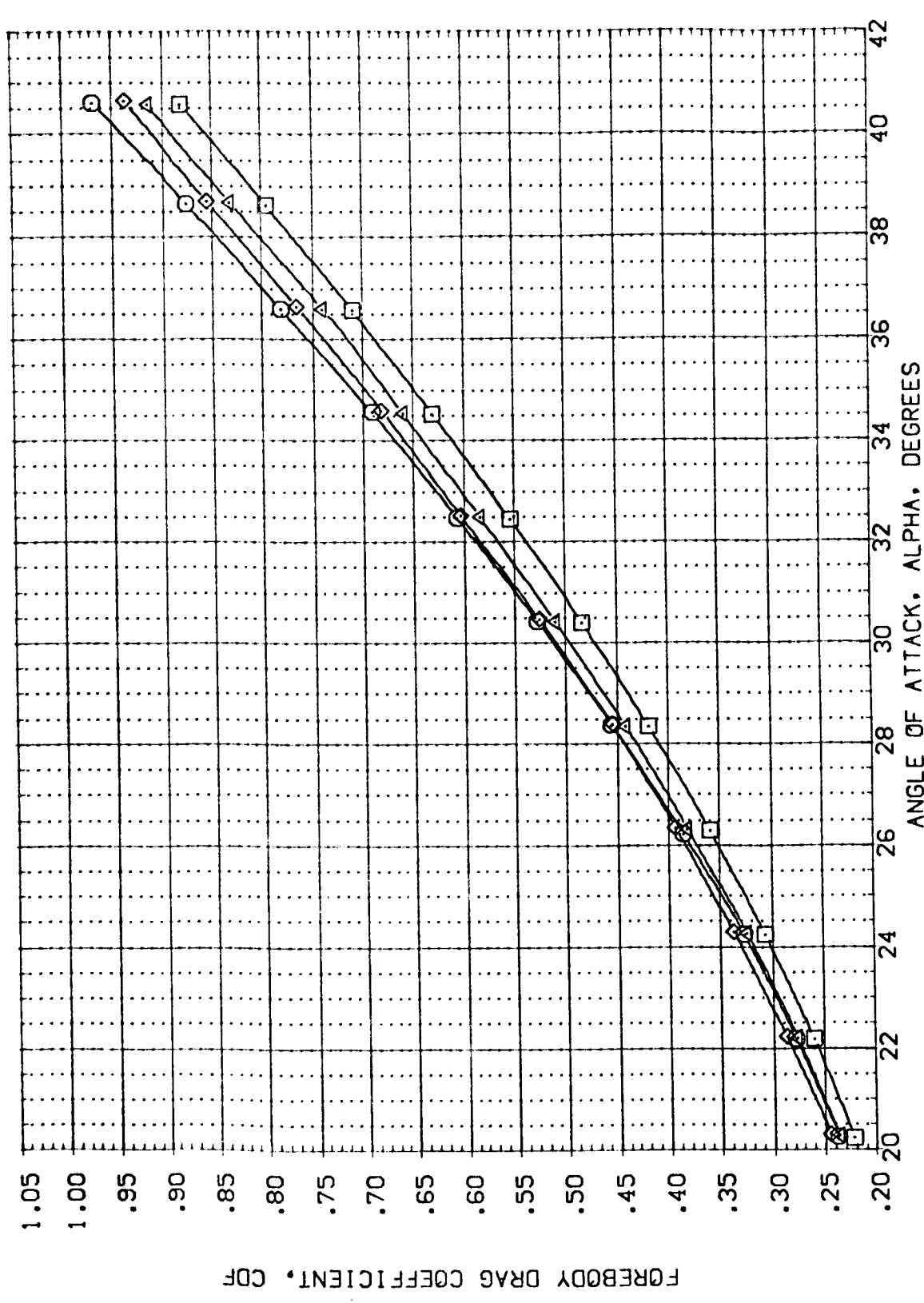


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398
(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(OA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87022)	MSFC 574(OA48) CR8 1398	.000	-40.000	999.990	-14.250	LREF 474.8000 N.
(F87106)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87107)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	XMRP 838.7000 N.
						YMRP .0000 N.
						ZMRP .0000 N.
						SCALE .0040

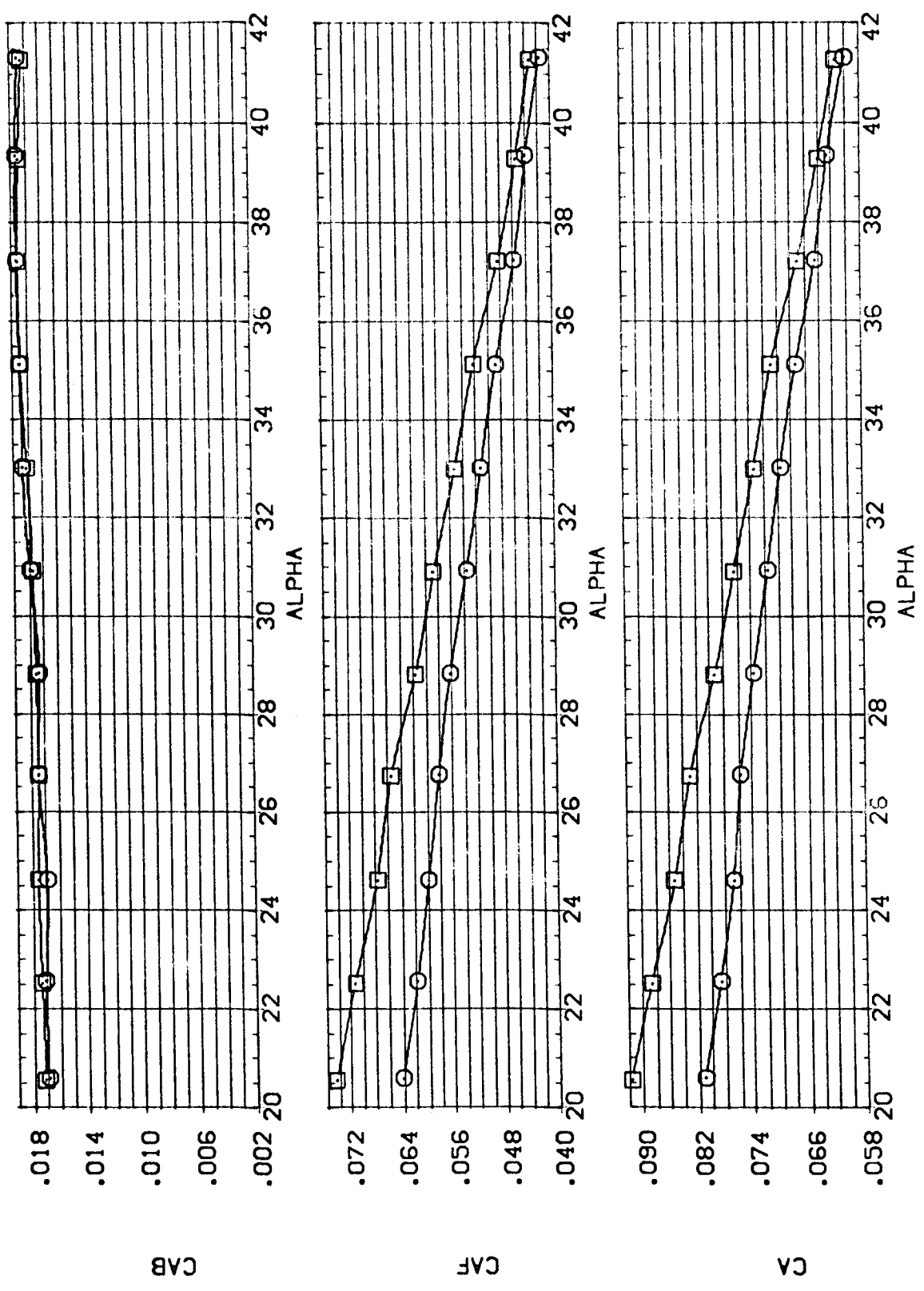


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) CRB 139B
 (F87022) MSFC 574(CA48) CRB 139B
 (F87106) MSFC 574(CA48) CRB 139B
 (F87107) MSFC 574(CA48) CRB 139B

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SG.F.T.
 .000 -40.000 999.990 .000 LREF 474.8000 N.
 .000 -40.000 999.990 .000 BREF 936.7000
 .000 -40.000 999.990 .000 XMRP 838.7000
 .000 .0000 .0000
 .0000 .0000
 .0040

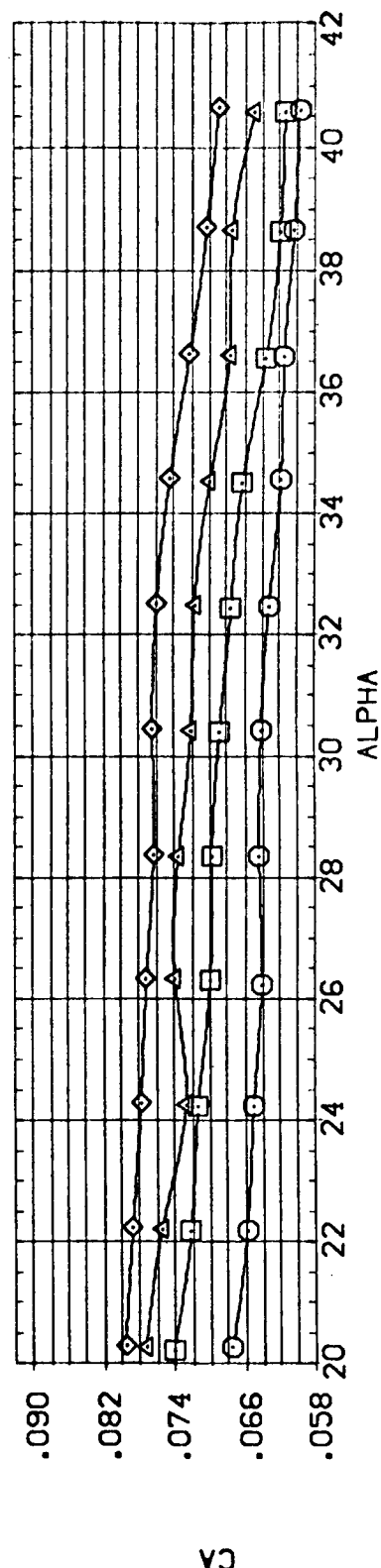
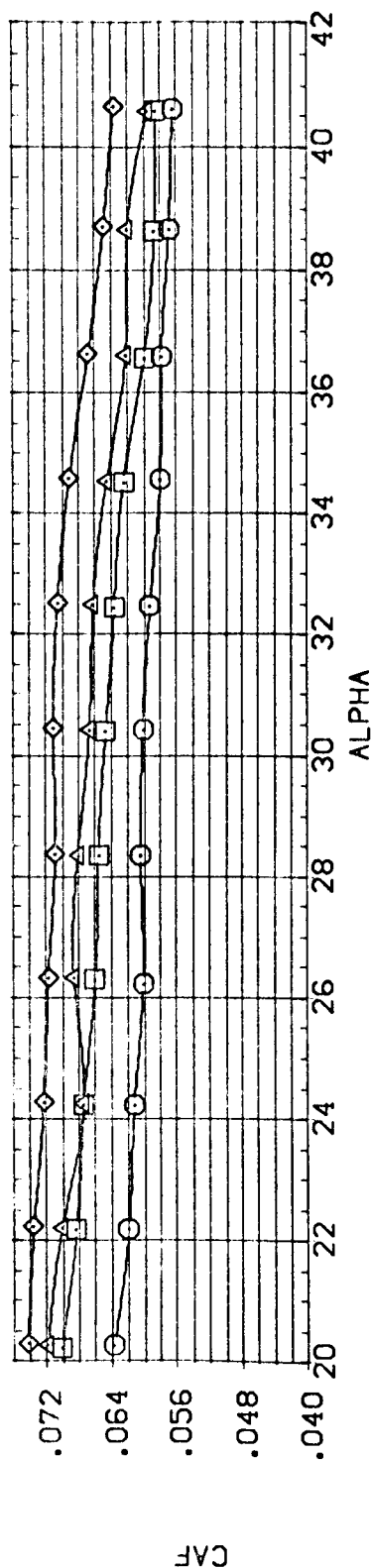
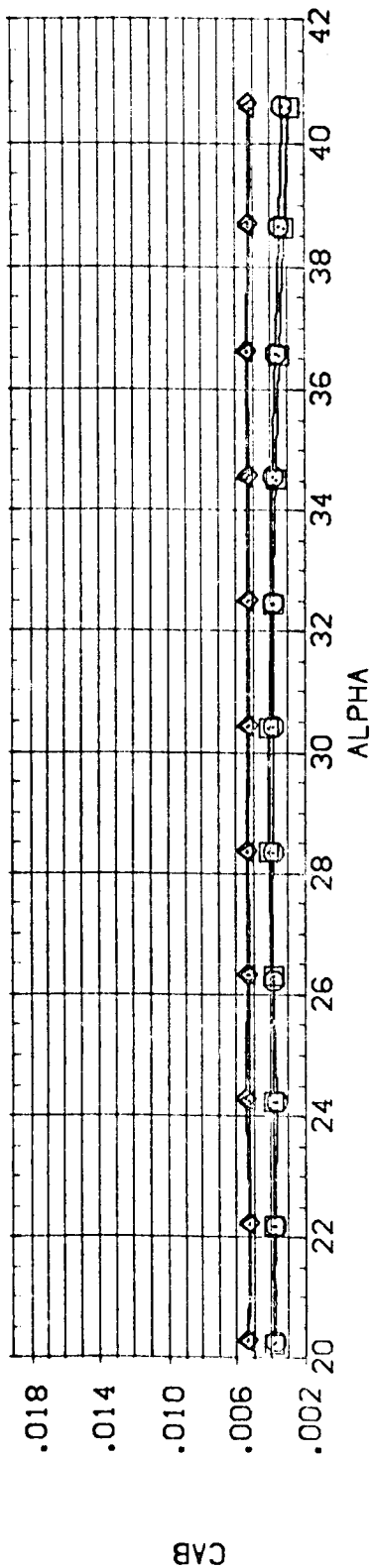


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		BETA		ELEVTR		SPDRBK		BOFLAP		REFERENCE INFORMATION	
(187009)	□	MSFC 574 (CA48)	CRB 1398	.000	.000	999.990	.000	999.990	.000	SREF	2690.0000	50.FT.	
(187022)	□	MSFC 574 (CA48)	CRB 1398	.000	-40.000	999.990	-14.250	999.990	-14.250	LREF	474.8000	IN.	
(187106)	□	DATA NOT AVAILABLE		.000	-40.000	999.990	-14.250	999.990	-14.250	BREF	936.7000	IN.	
(187107)	□	DATA NOT AVAILABLE		.000	-40.000	999.990	-14.250	999.990	-14.250	XMRP	838.7000	IN.	
										YMRP	.0000	IN.	
										ZMRP	.0000	IN.	
										SCALE	.0040		

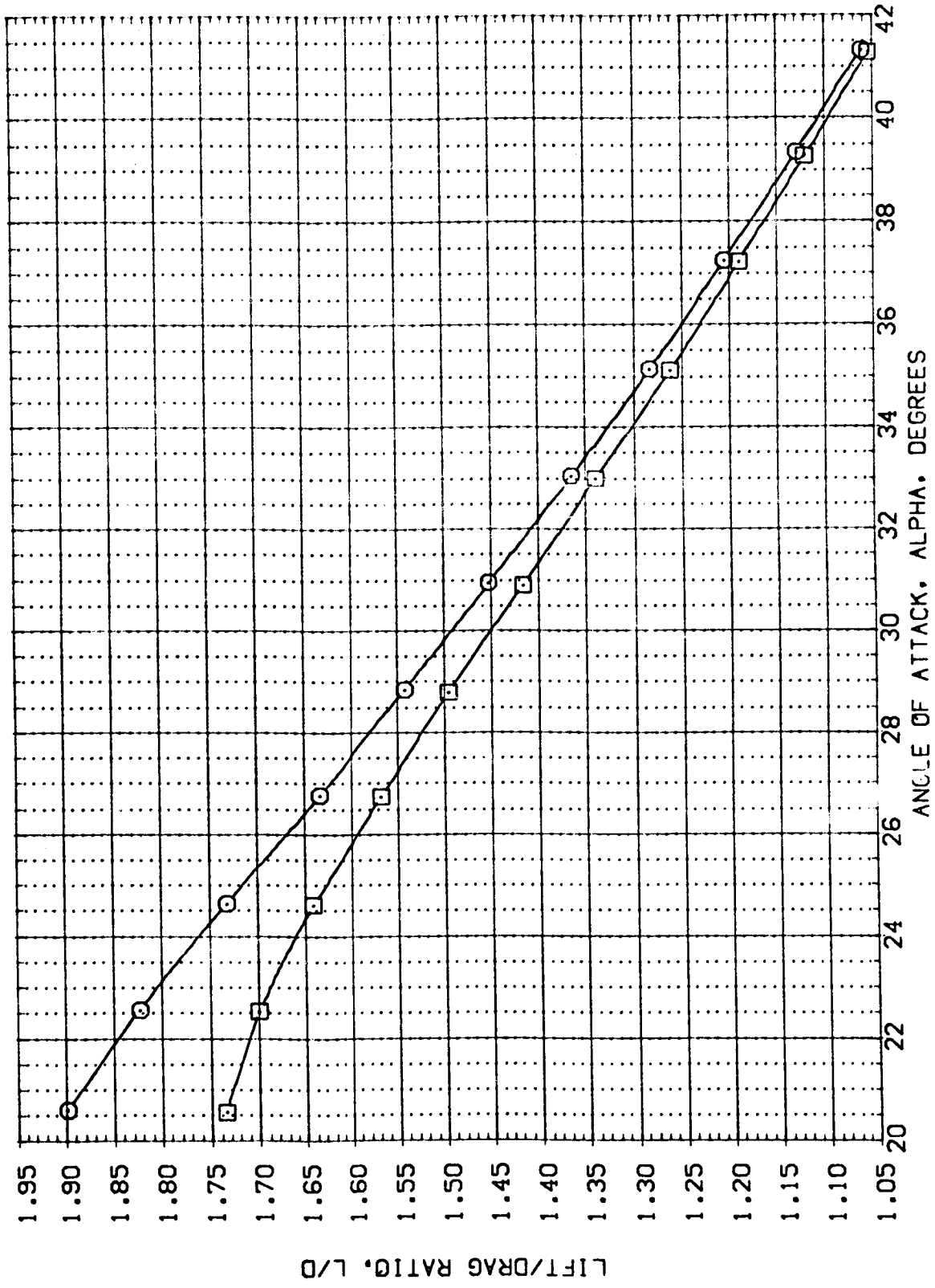


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574 (0A48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(187022)	MSFC 574 (0A48) ORB 139B	.000	-40.000	999.990	-14.250	LREF 474.8000 IN.
(F87022)	MSFC 574 (0A48) ORB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87107)	MSFC 574 (0A48) ORB 139B	.000	-40.000	999.990	-14.250	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

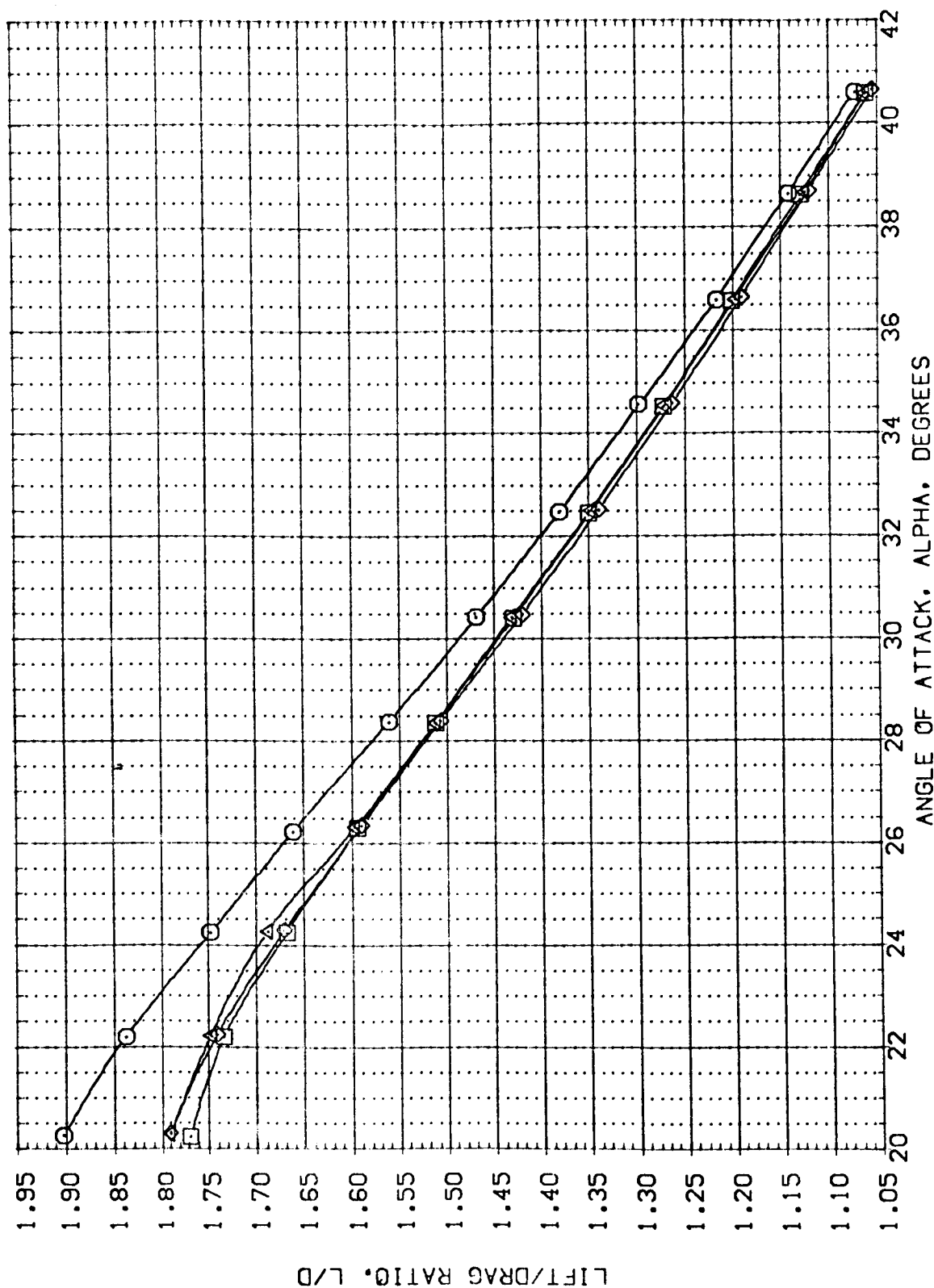


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

REFERENCE INFORMATION	
EF	2690.0000 SC.FT.
EF	474.8000 IN.
EF	936.7000 IN.
RP	838.7000 IN.
RP	.0000 IN.
RP	.0000 IN.
ALE	.0040 IN.



FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

$$[A]_{\text{MACH}} = 2.99$$

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(CA48) CR3 398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87022)	MSFC 574(CA48) CR3 398	.000	-40.000	999.990	-14.250	LREF 474.8000
(F87106)	MSFC 574(CA48) CR3 398 V/H19	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87107)	MSFC 574(CA48) CR3 398 V/H20	.000	-40.000	999.990	-14.250	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

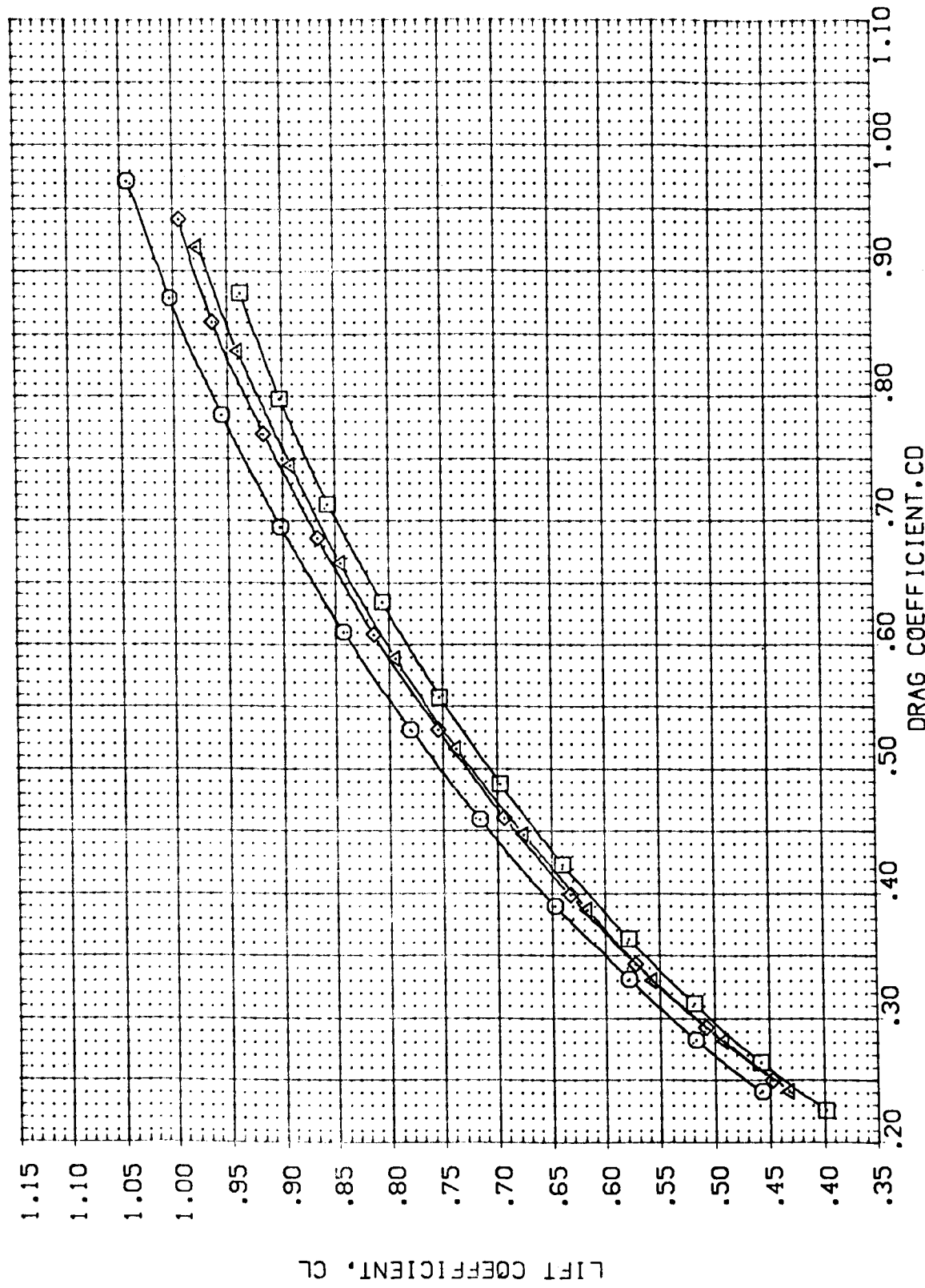


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187069) MSFC 574 (0A48) CRB 1398
 (G87022) MSFC 574 (0A48) CRB 1398
 (G87106) DATA NOT AVAILABLE
 (G87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 864.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

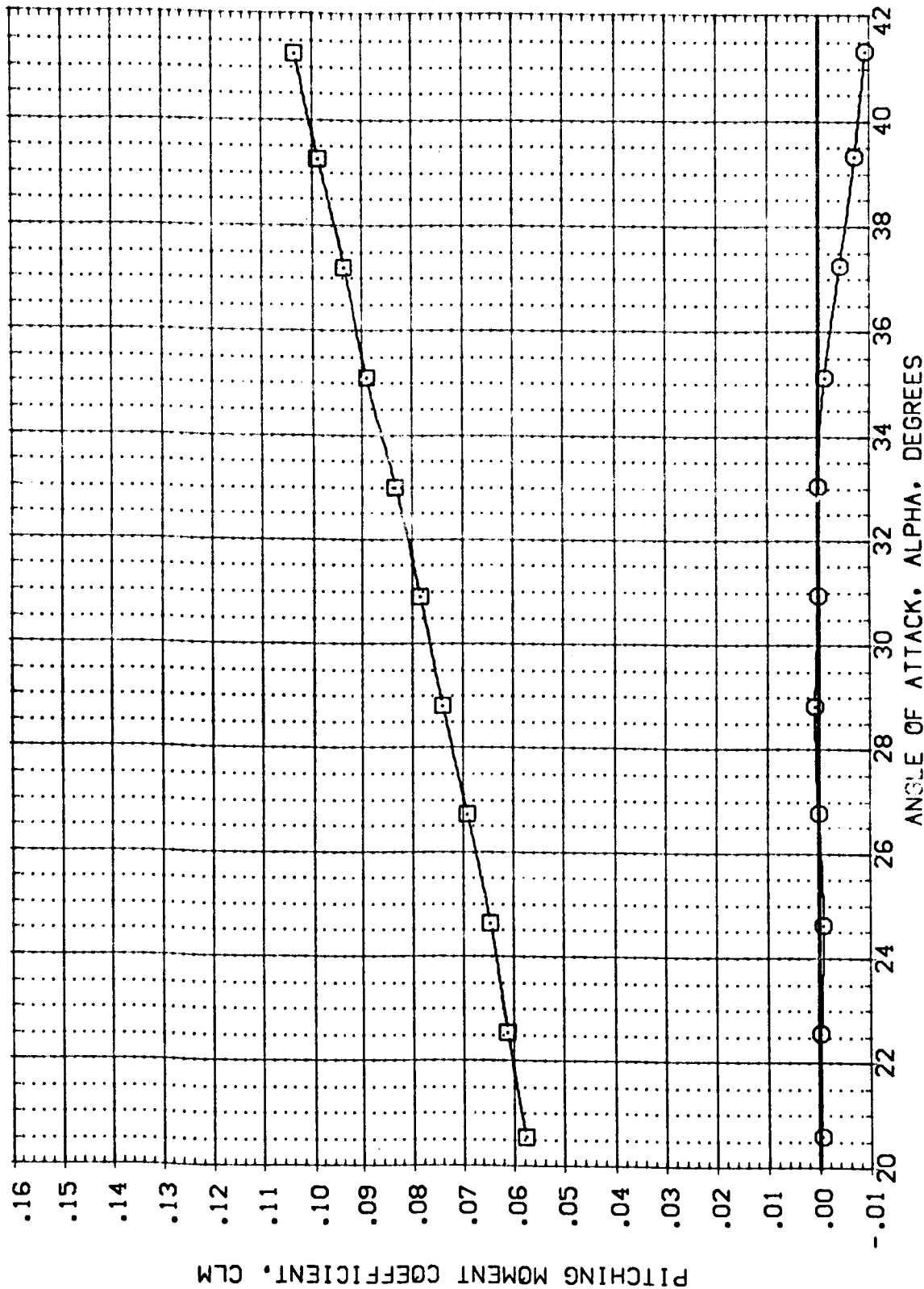


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B (AFT C.G.)

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187059)	MSFC 574(CA48)	ORB 398
(187022)	MSFC 574(CA48)	ORB 398
(187136)	MSFC 574(CA48)	ORB 398
(187107)	MSFC 574(CA48)	ORB 398

W/H=19
W/H=20

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.FT.

.000	.000	999.990	.000	SREF	2690.0000
.000	-40.000	999.990	-14.250	LREF	474.8000
.000	-40.000	999.990	-14.250	BREF	936.7000
.000	-40.000	999.990	-14.250	YMRP	864.5000
.000	-40.000	999.990	-14.250	ZMRP	.0000
.000	-40.000	999.990	-14.250	SCALE	.0040

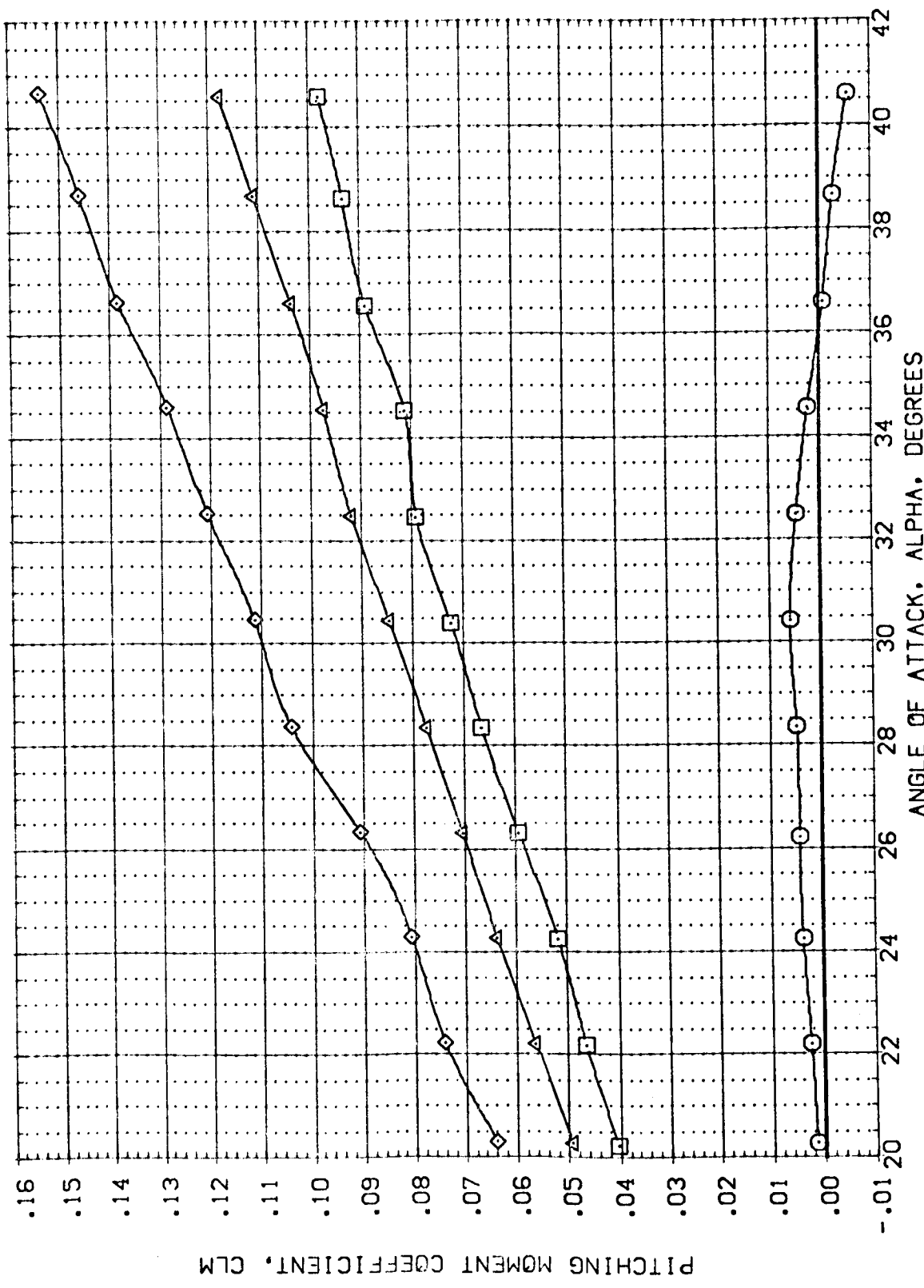


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B (AFT C.G.)

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

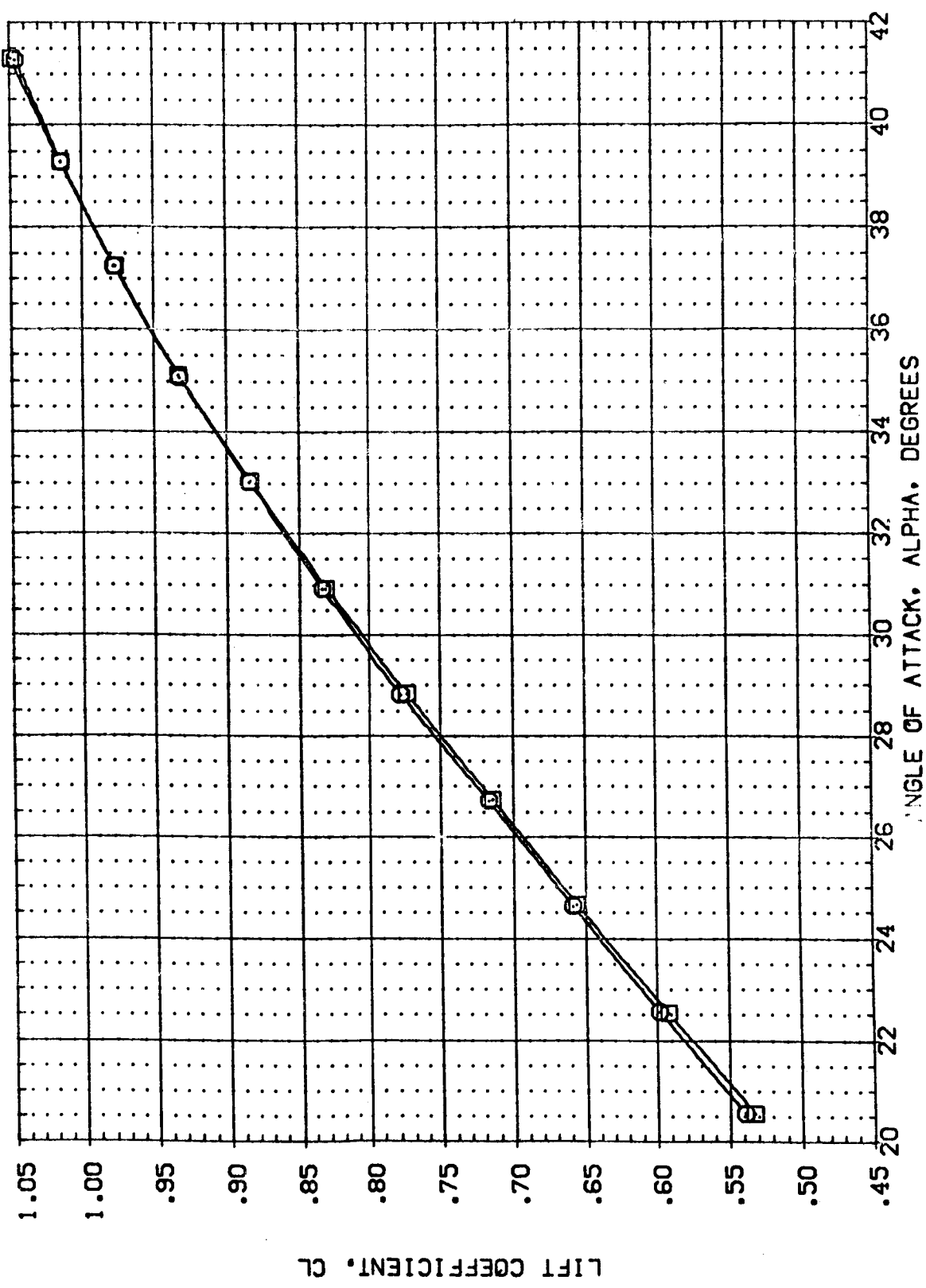


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPDSRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.0000 IN.
 BREF 936.7000 IN.
 XMRP 833.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

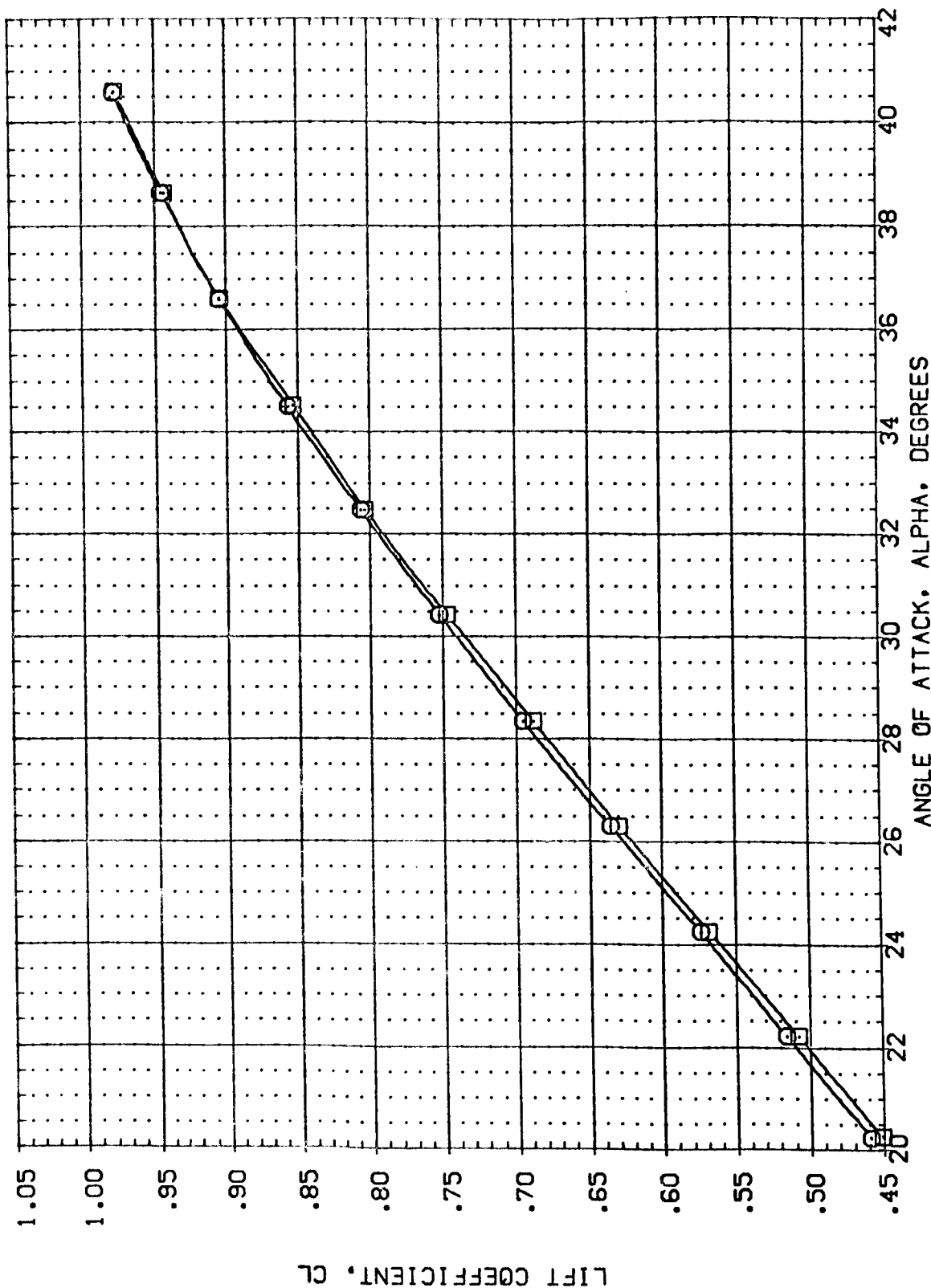


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	
(F87065)	MSFC 574(0A48) ORB 139	.000	-40.000	999.990	-14.250	SREF	2690.0000 50.FT.
(F87112)	MSFC 574(0A48) ORB 139 Z1	.000	-40.000	999.990	-14.250	LREF	474.8000 IN.
						BREF	936.7000 IN.
						XMRP	838.7000 IN.
						ZMRP	.0000 IN.
						SCALE	.0040

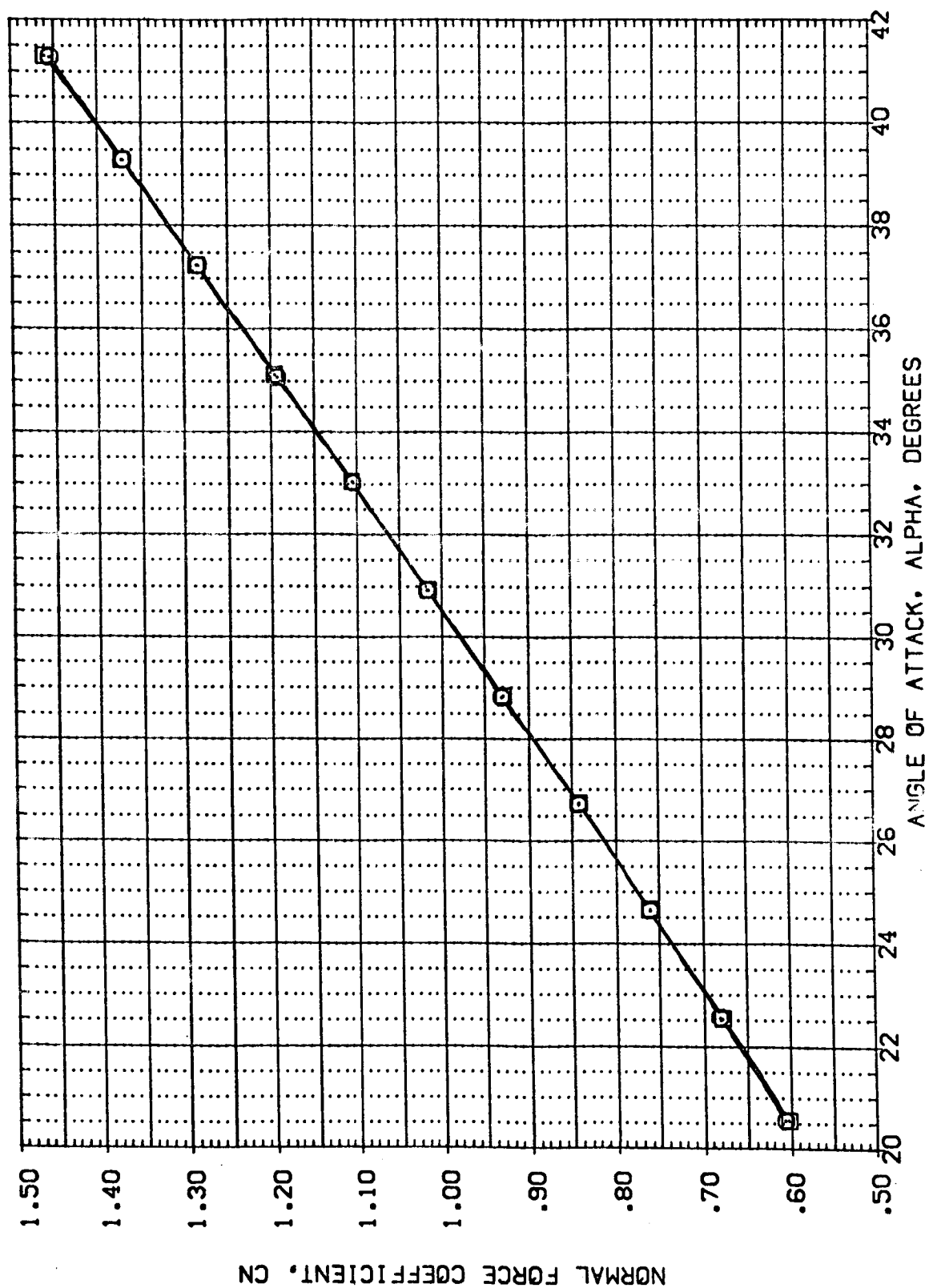


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL: (F87065) (F87112)

CONFIGURATION DESCRIPTION: MSFC 574(0A48) ORB 139 MSFC 574(0A48) ORB 139 Z1

BETA: .000 .000

ELEVTR: -40.000 -40.000

SPOILERK: 999.990 999.990

BOFLAP: -14.250 -14.250

REFERENCE INFORMATION:

SREF	2690.0000	SQ.FT.
LREF	474.8000	IN.
BREF	938.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

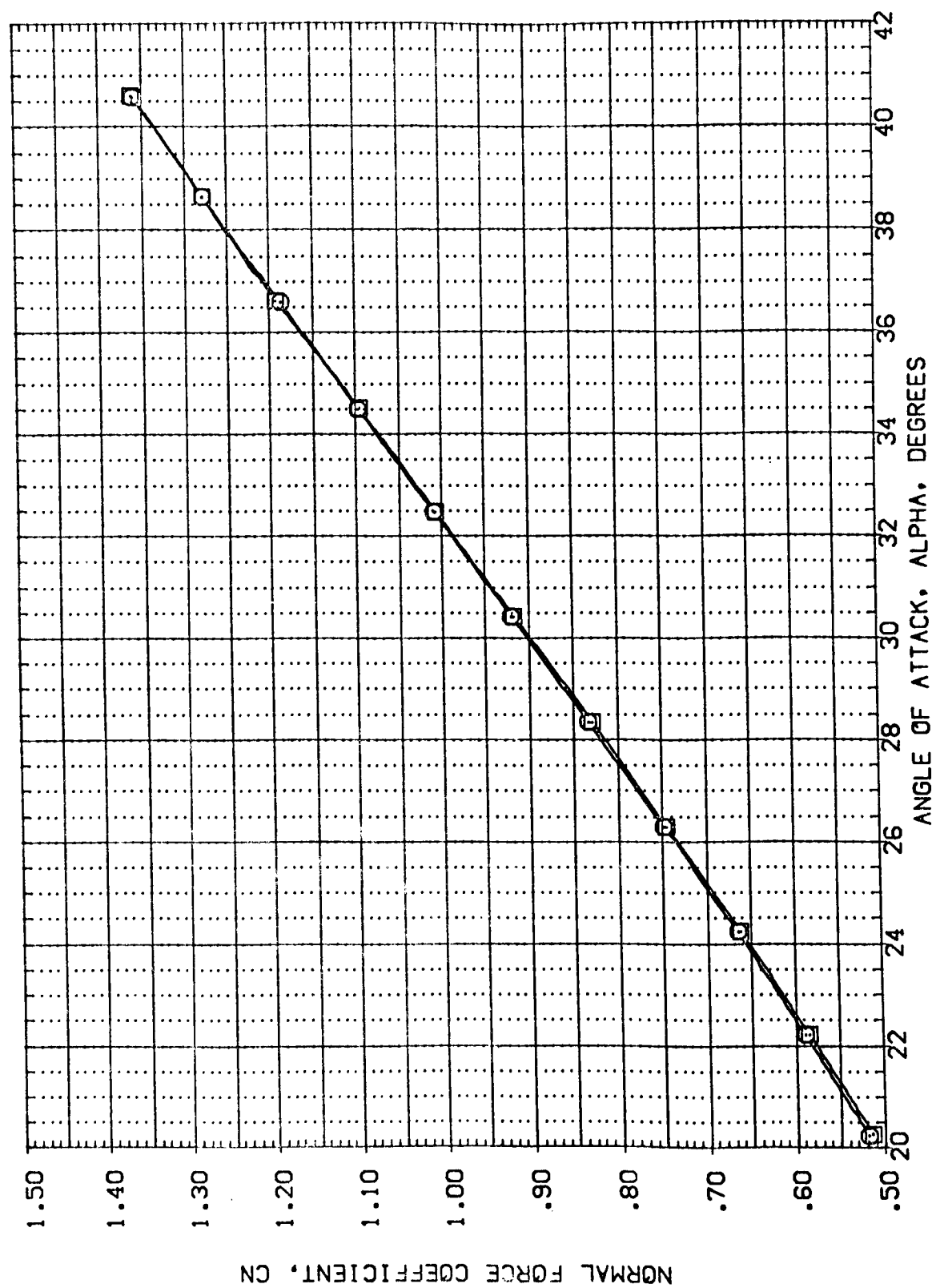


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(DA48) ORB 139
 (F87112) MSFC 574(DA48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

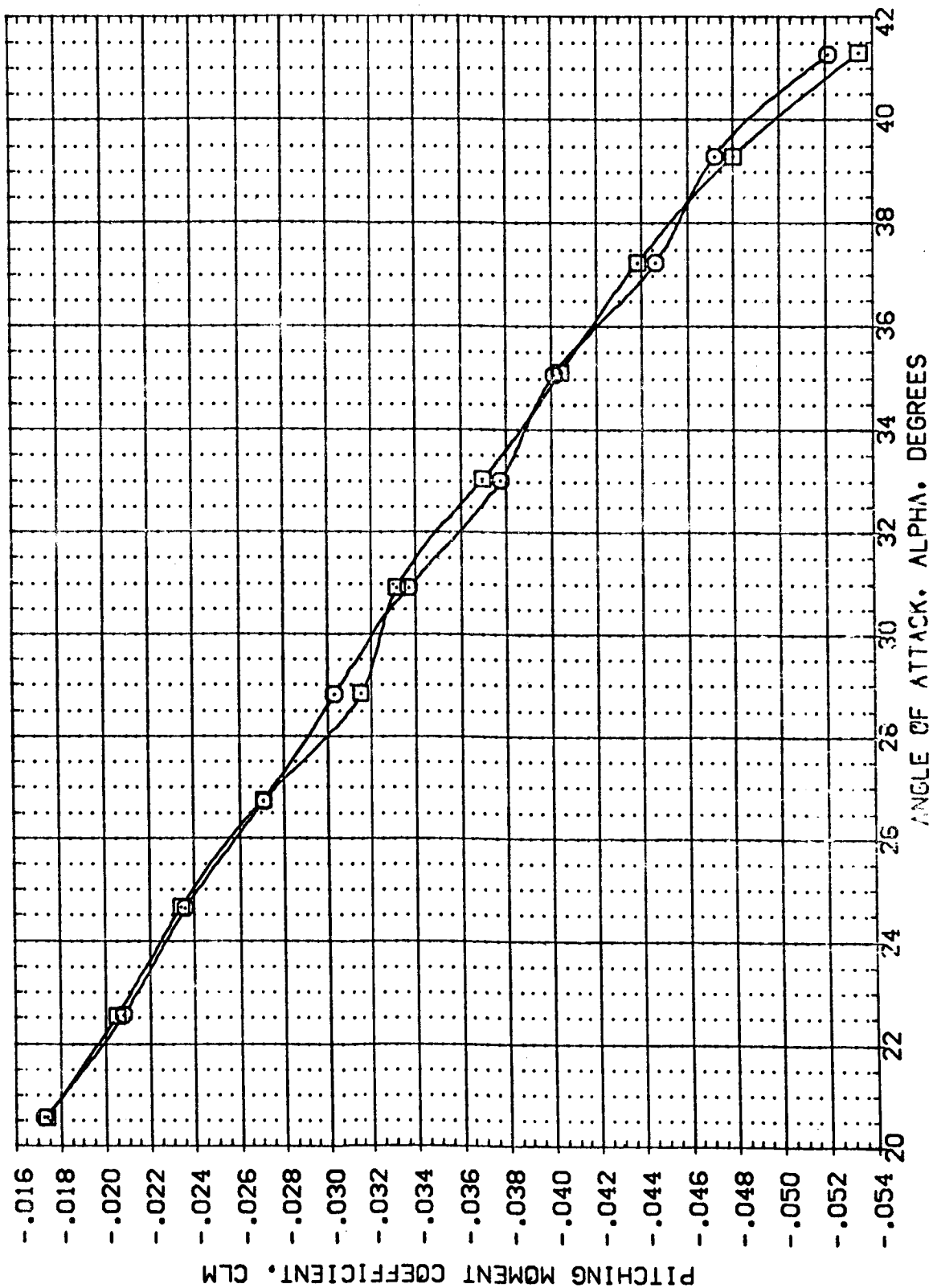


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOSRK	BOFLAP	SREF	LREF	BREF	XMRRP	YMRRP	ZMRRP	SCALE	2690.0000	50.0000	50.0000
(F87065)	MSFC 574(0A48) ORB 139	.000	-40.000	999.990	-14.250	2690.0000	474.8000	936.7000	833.7000	.0000	.0000	.0040	IN.	IN.	IN.
(F87112)	MSFC 574(0A48) ORB 139 Z1	.000	-40.000	999.990	-14.250	2690.0000	474.8000	936.7000	833.7000	.0000	.0000	.0040	IN.	IN.	IN.

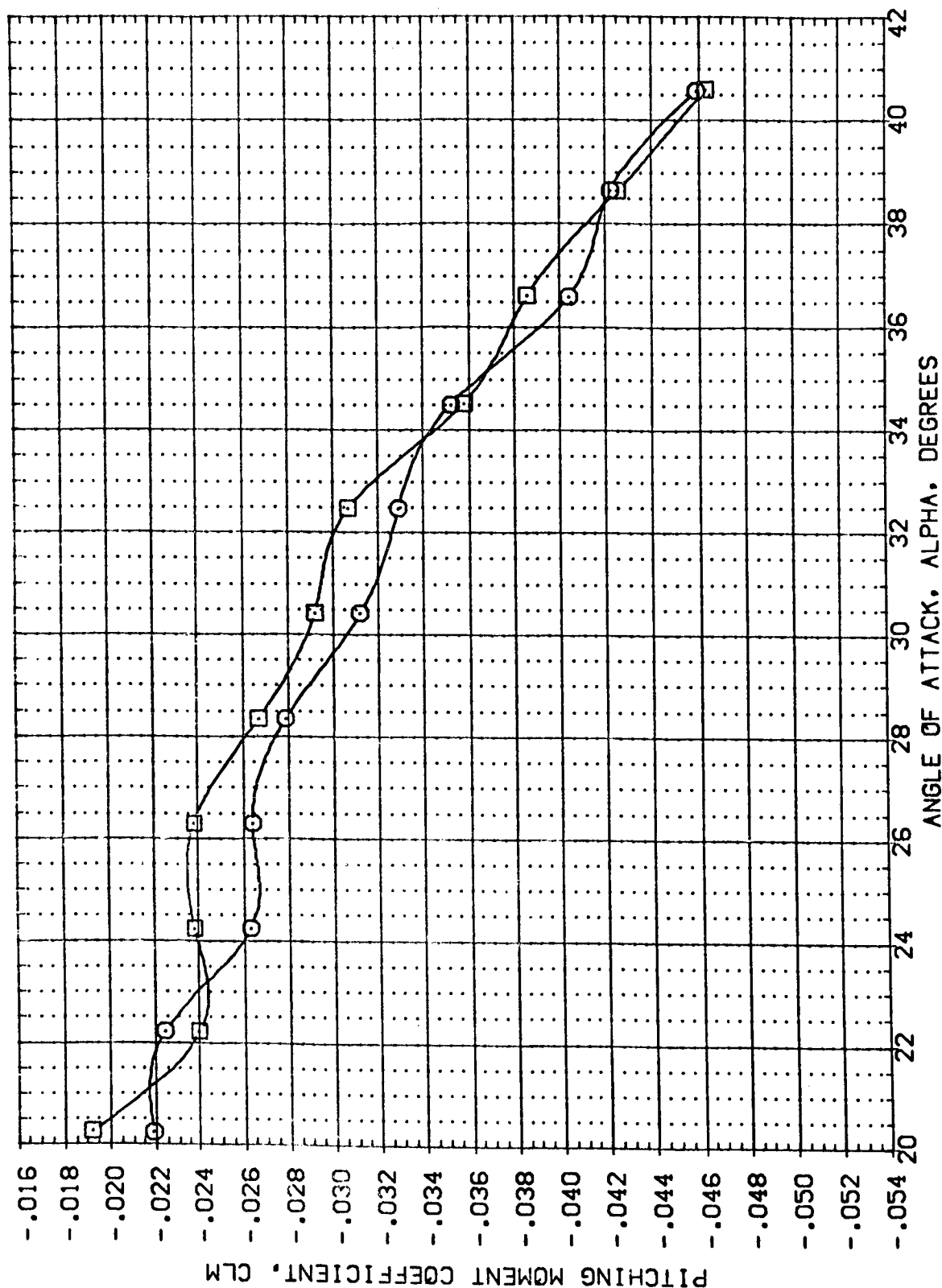


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0448) ORB 139
 (F87112) MSFC 574(0448) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

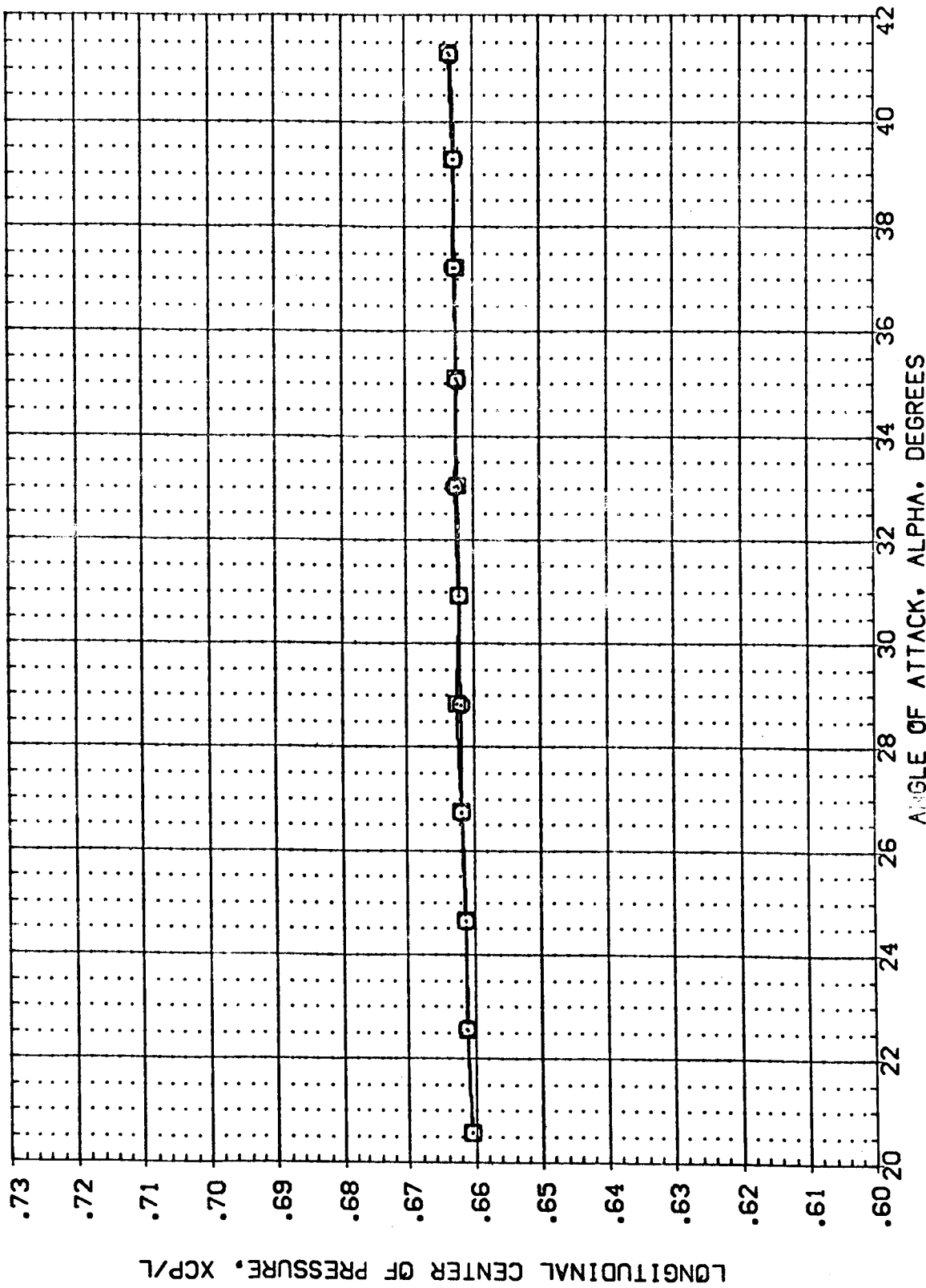


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.FT.
 .000 -10.000 999.990 -14.250 SREF 2690.0000
 .000 -10.000 999.990 -14.250 LREF 474.8000
 .000 -10.000 999.990 -14.250 BREF 938.7000
 .000 -10.000 999.990 -14.250 XMRP 838.7000
 .000 -10.000 999.990 -14.250 YMRP .0000
 .000 -10.000 999.990 -14.250 ZMRP .0000
 .000 -10.000 999.990 -14.250 SCALE .0040

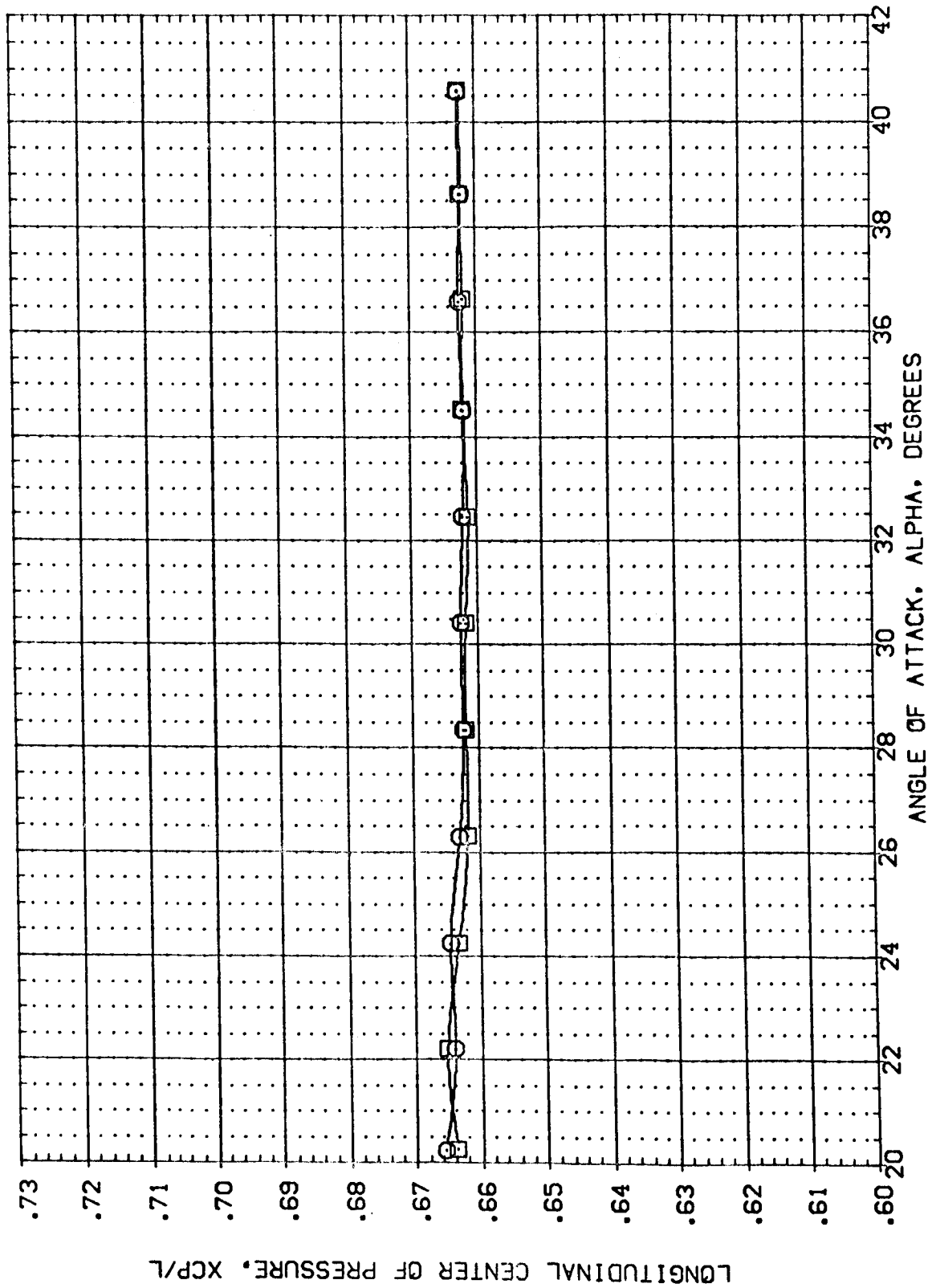


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87065)	MSFC 574(0A48) ORB 139	.000	-40.000	999.990	-14.250	SREF 2690.0000 SQ.FT.
(F87112)	MSFC 574(0A48) ORB 139 Z1	.000	-40.000	999.990	-14.250	LREF 474.8000 IN.
						BREF 936.7000 IN.
						XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

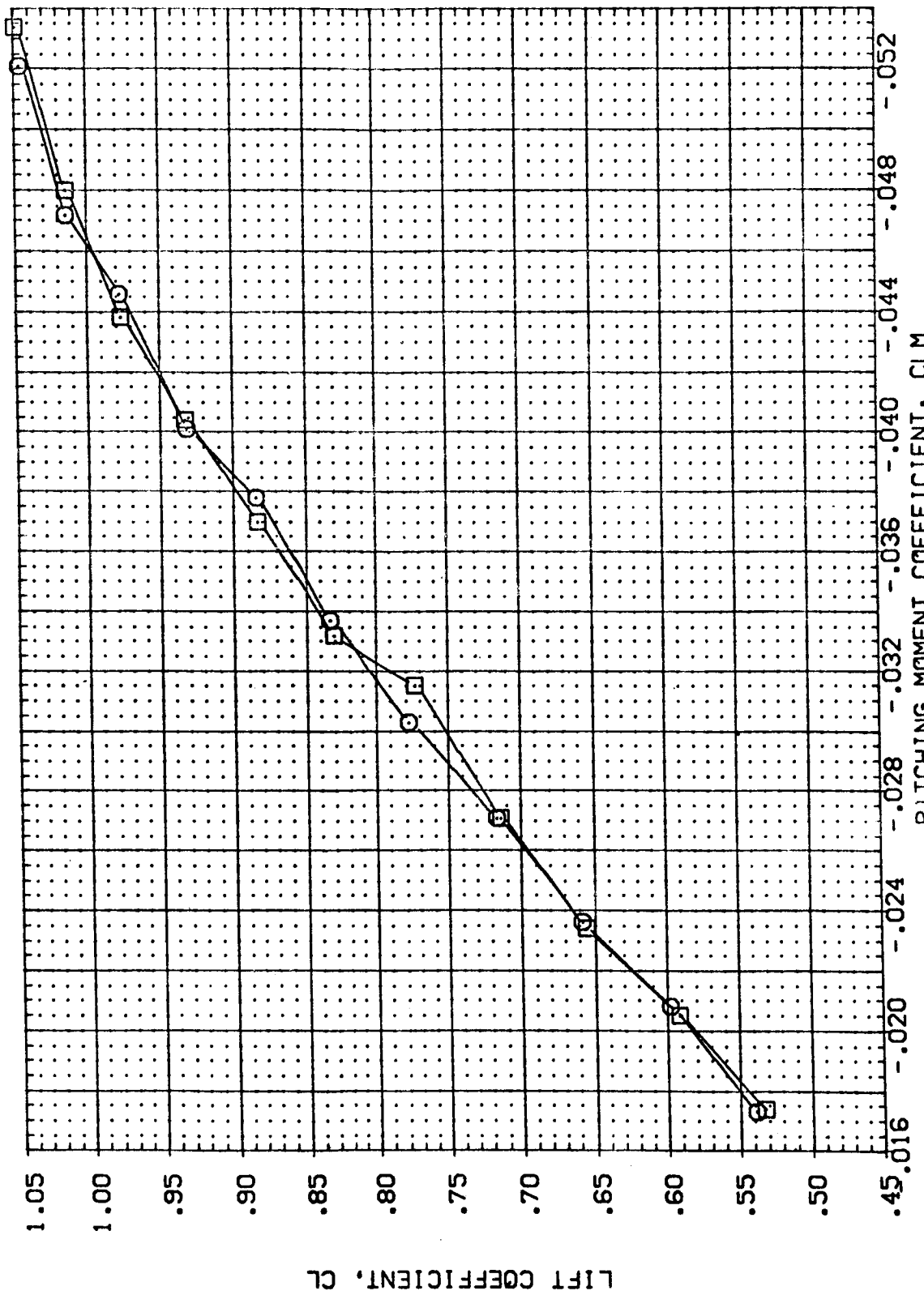


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPDBRK BOELAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

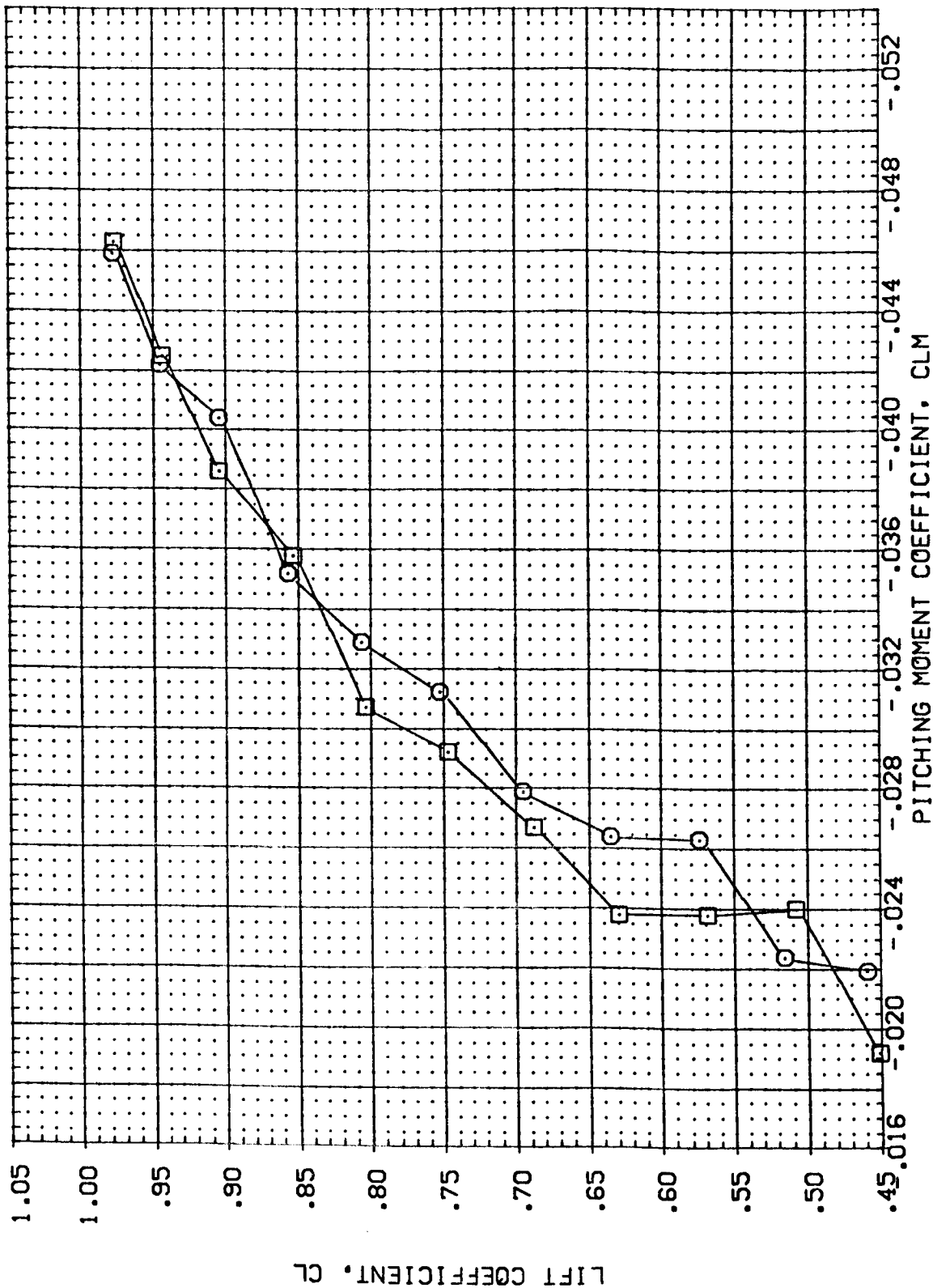


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 138
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

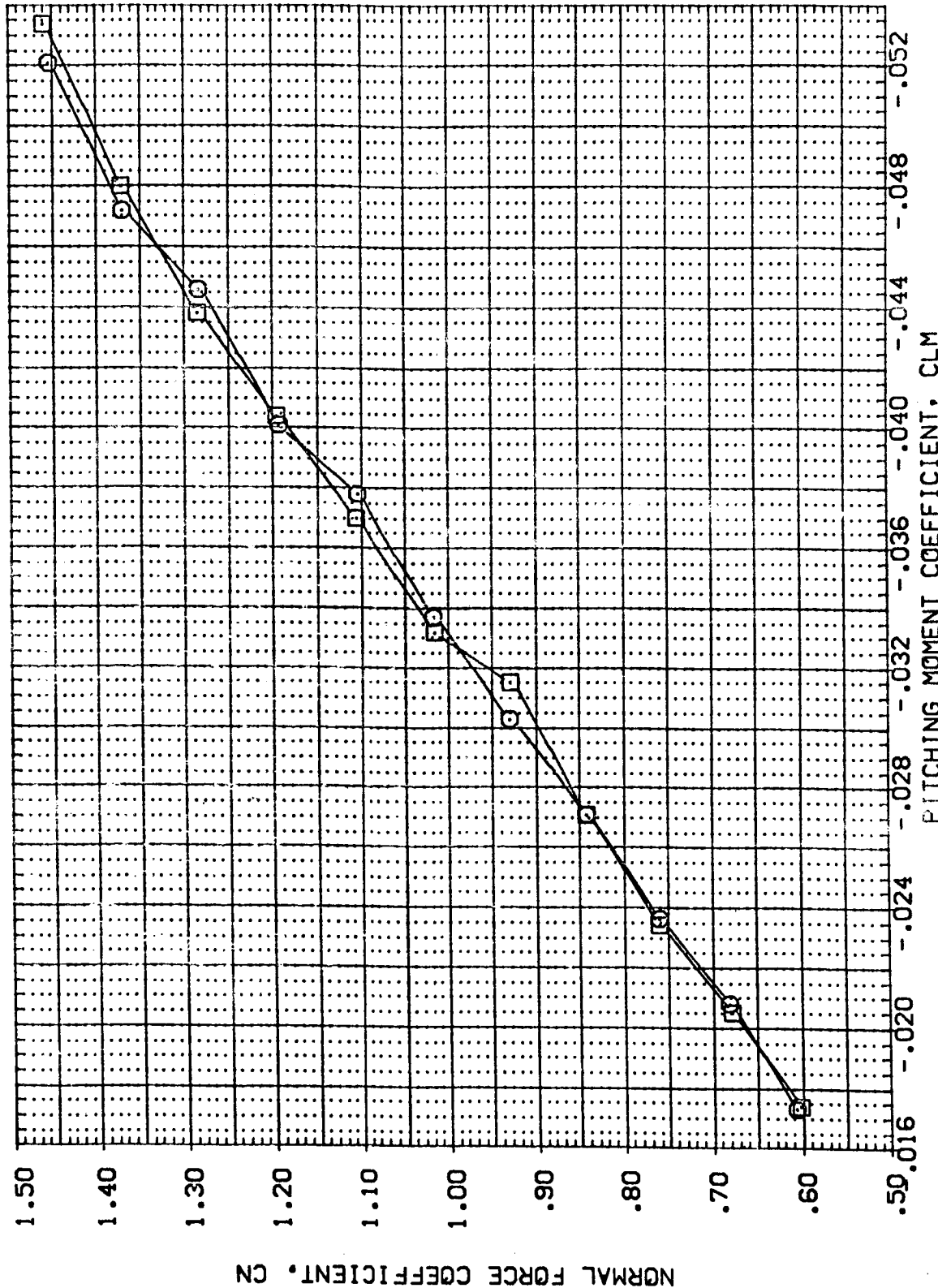


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 -40.000 999.990 -14.250 SREF 2690.0000 SQ.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 XMRP 936.7000 IN.
 YMRP 838.7000 IN.
 ZMRP .0000 IN.
 SCALE .0040

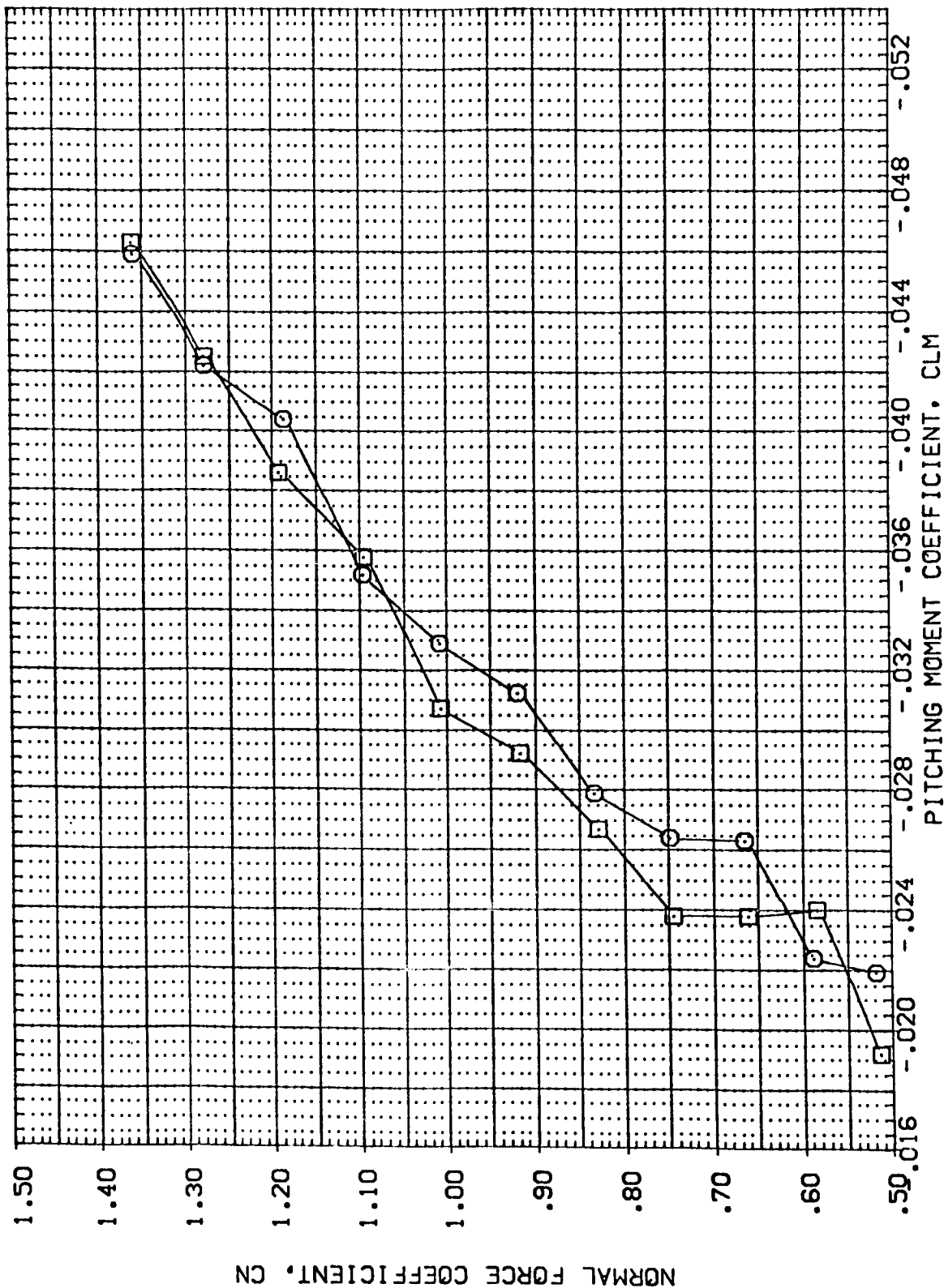


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A18) ORB 139
 (F87112) MSFC 574(0A18) ORB 139 Z1

BETA ELEVTR SPOSRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 935.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

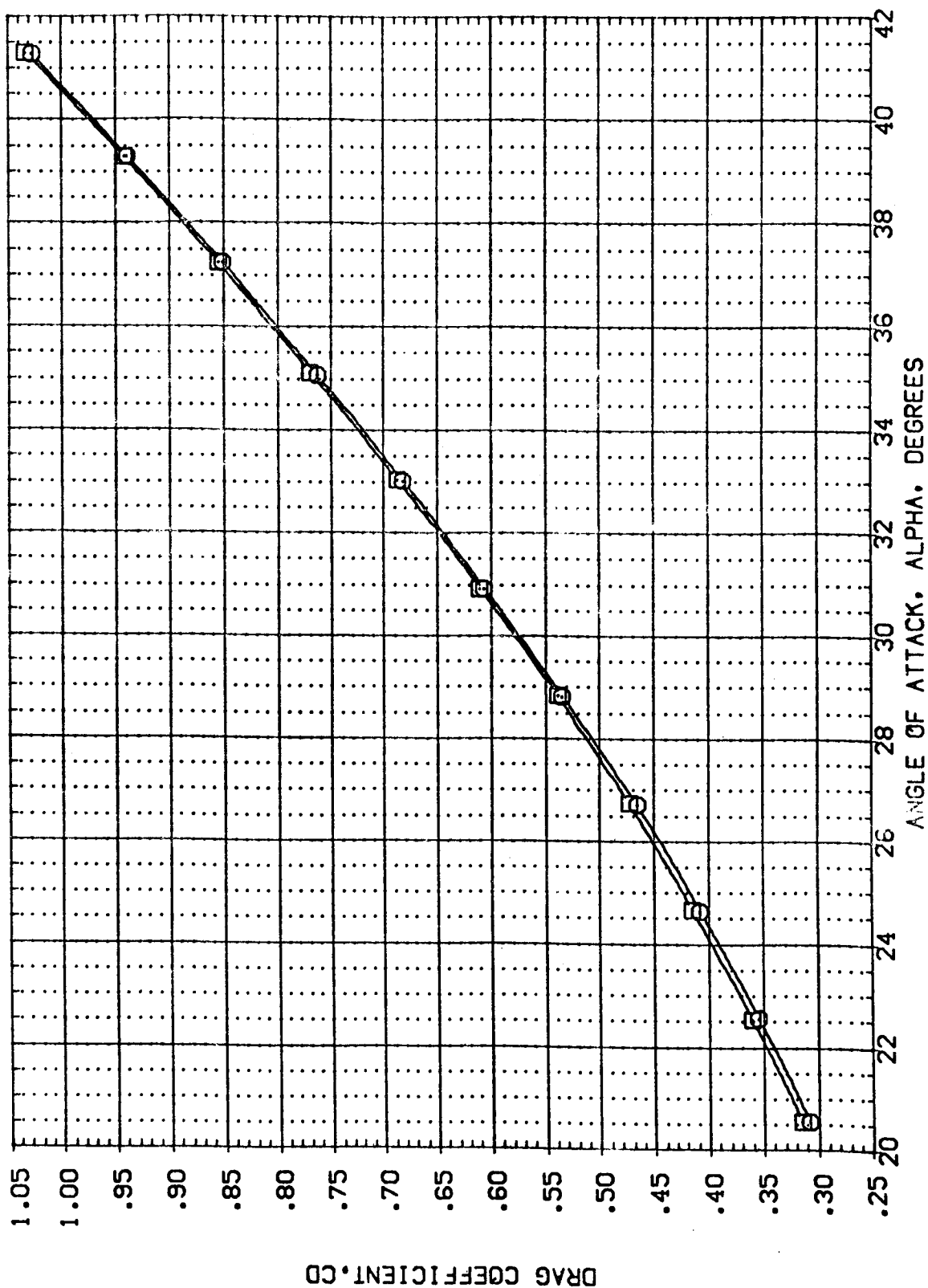


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 YMRP 838.7000 IN.
 ZMRP .0000 IN.
 SCALE .0040

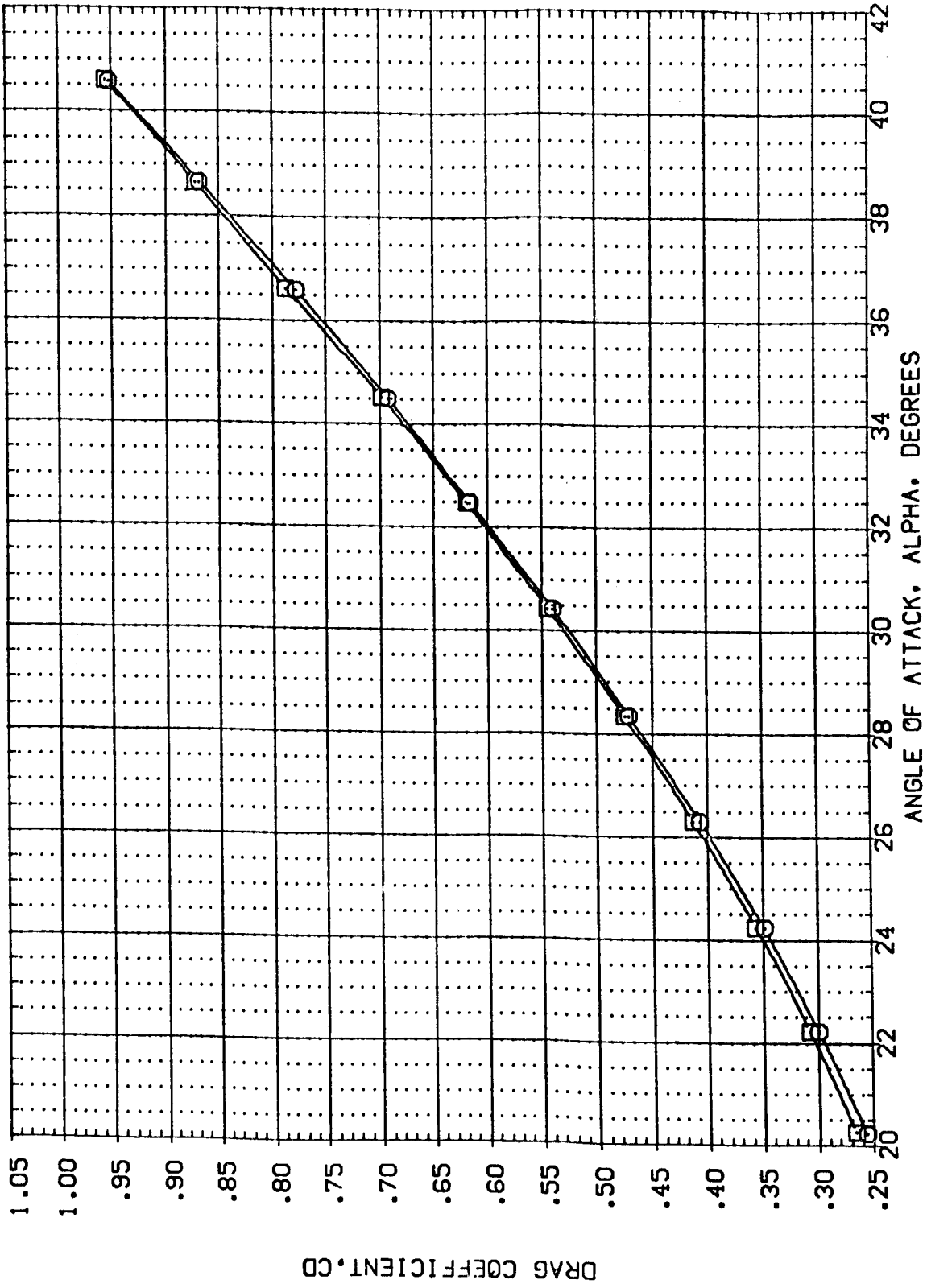



FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL
(FB7065) 
(FB7112)

CONFIGURATION DESCRIPTION
MSFC 574(OA48) ORB 139
MSFC 574(OA48) ORB 139 Z1

BETA
.000
.000

ELEVTR
-40.000
-40.000

SPOBRK
999.990
999.990

BOFLAP
-14.250
-14.250

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XMRP 838.7000 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0040

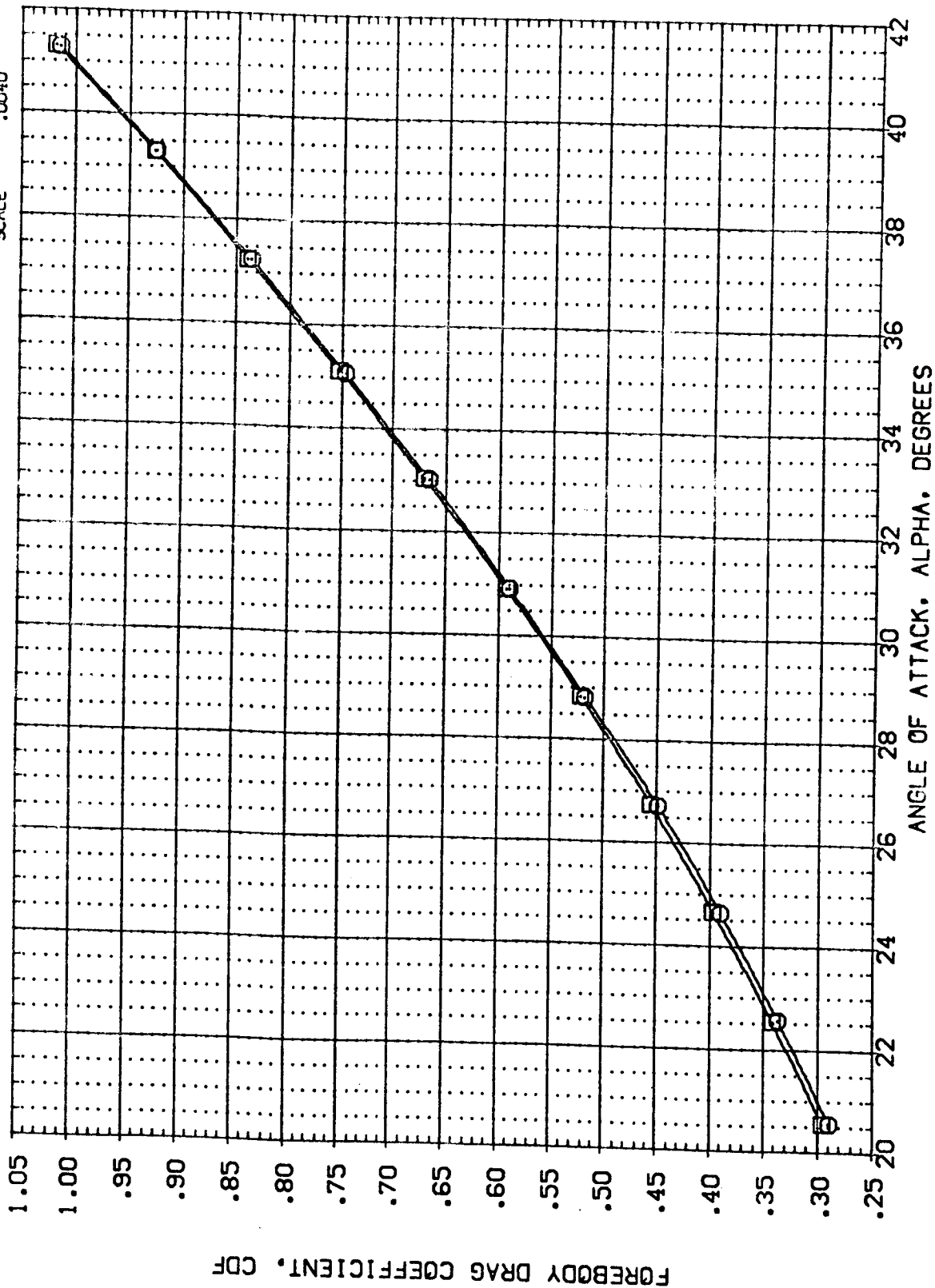


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

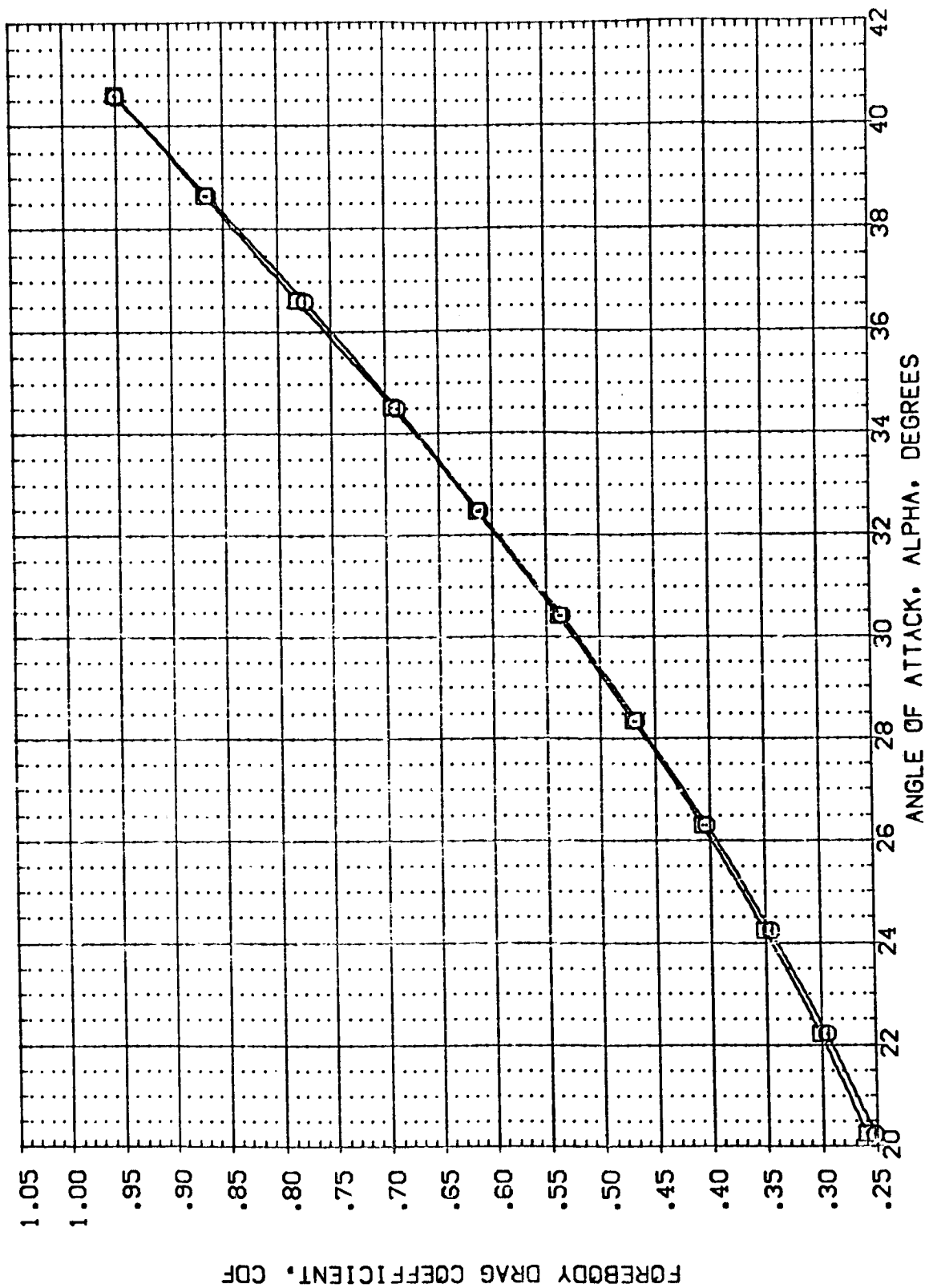


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL: (F87065) (F87112)

CONFIGURATION DESCRIPTION: MSFC 574(0A48) ORB 139 MSFC 574(0A48) ORB 139 Z1

BETA: .000, .003

ELEVTR: -40.000, -40.000

SPOBRK: 999.990, 999.990

BOFLAP: -14.250, -14.250

REFERENCE INFORMATION:

SREF	2690.0000	SG.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

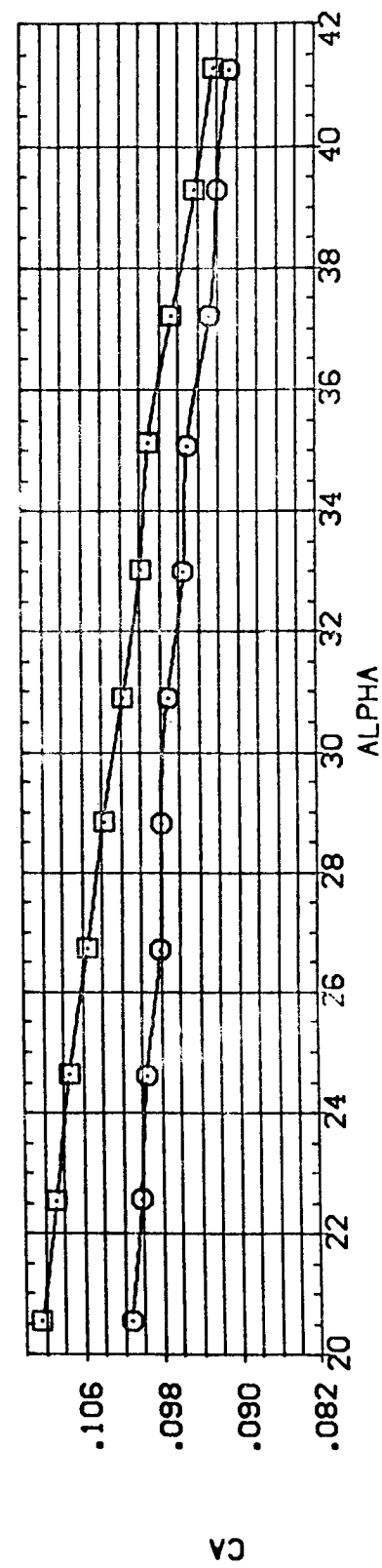
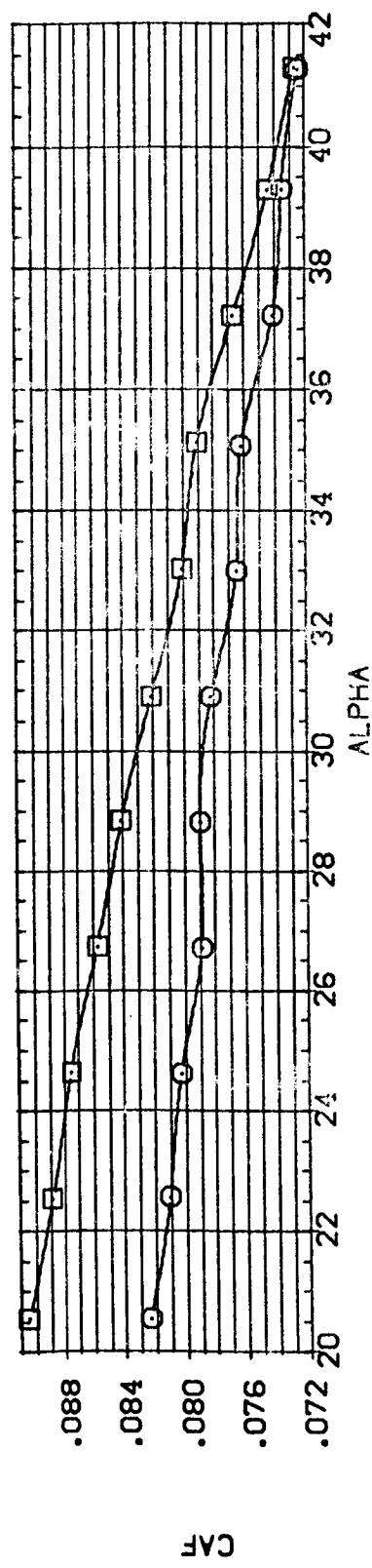
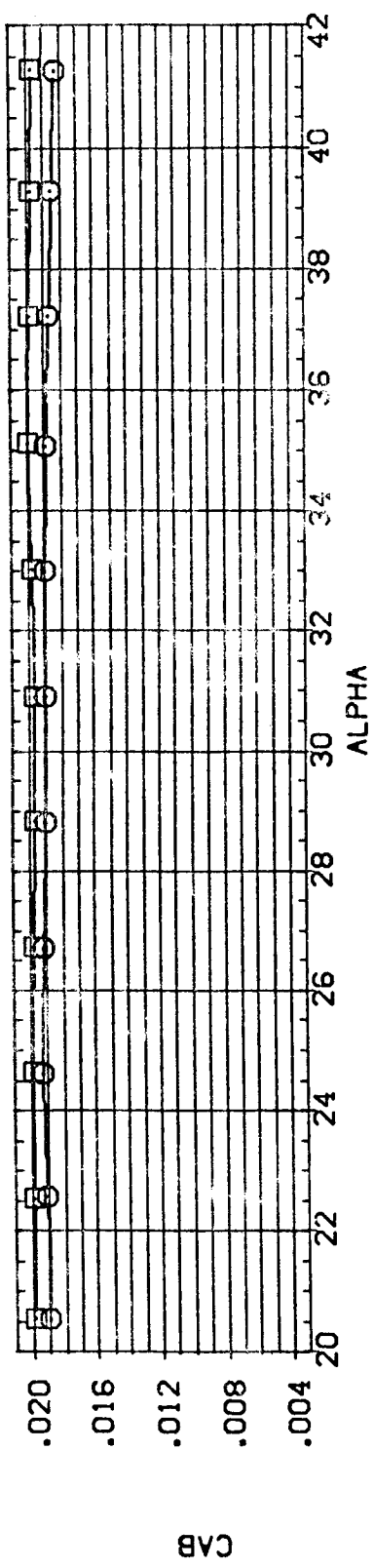


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) ☐ MSFC 574(0A48) ORB 139
 (F87112) ☐ MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BDFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

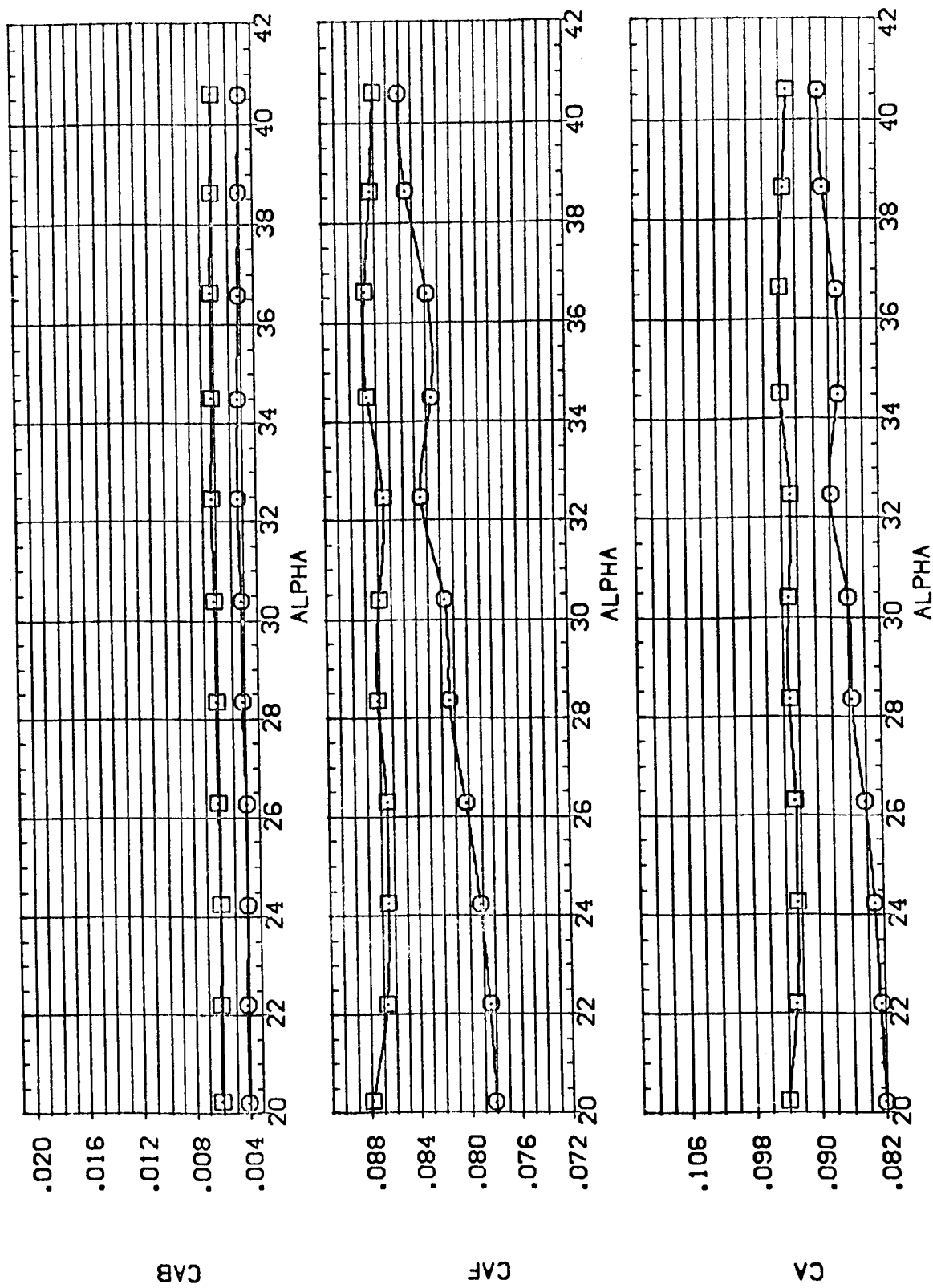


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(F87065) MSFC 574(0A48) ORB 139
(F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BDFLAP
.000 -40.000 999.990 -14.250
.000 -40.000 999.990 -14.250

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 536.7000 IN.
XMRP 838.7000 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0040

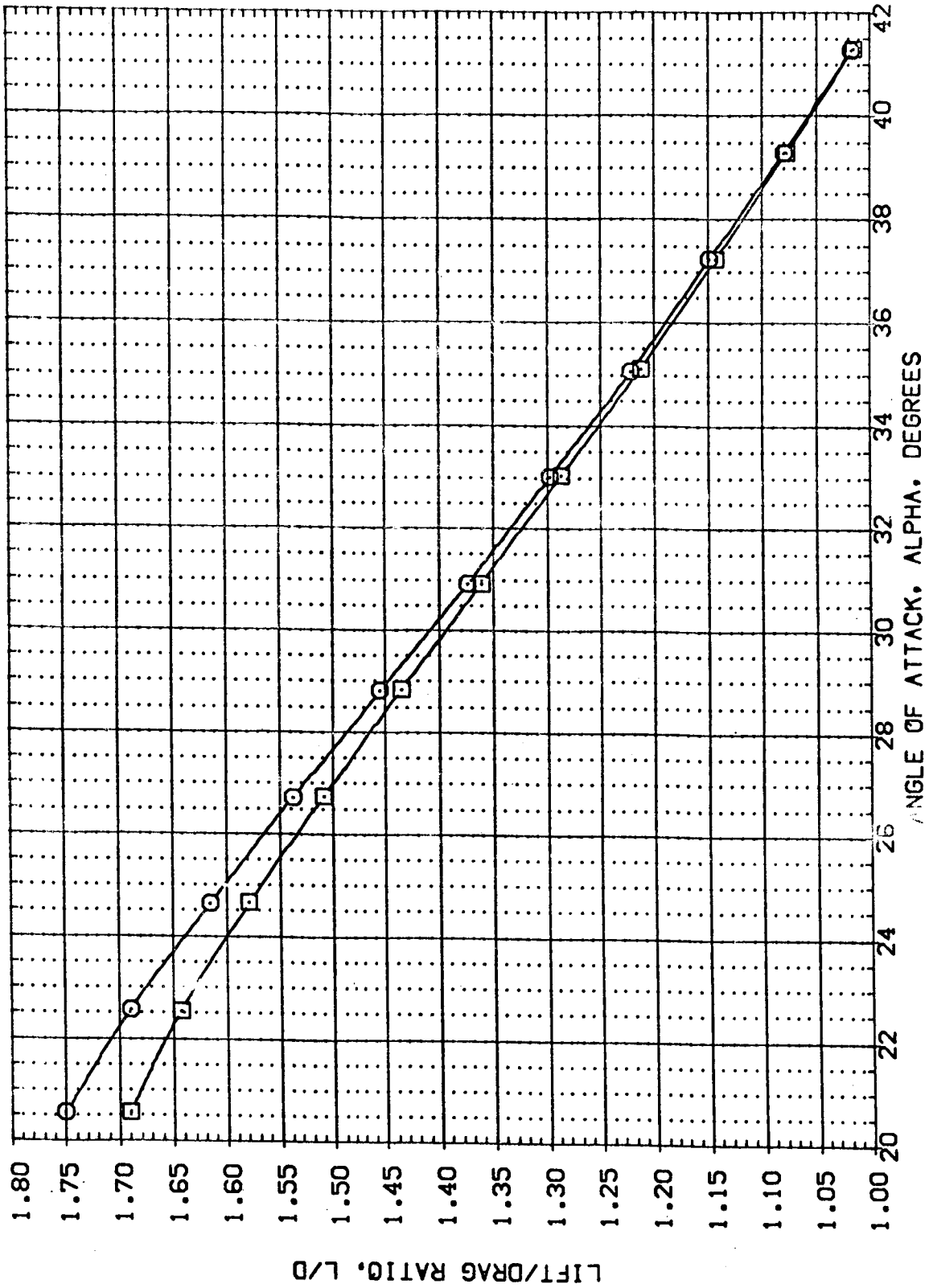


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

CAJ MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 -40.000 999.990 -14.250 SREF 2690.0000 59.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 XMRP 936.7000 IN.
 YMRP 838.7000 IN.
 ZMRP .0000 IN.
 SCALE .0040

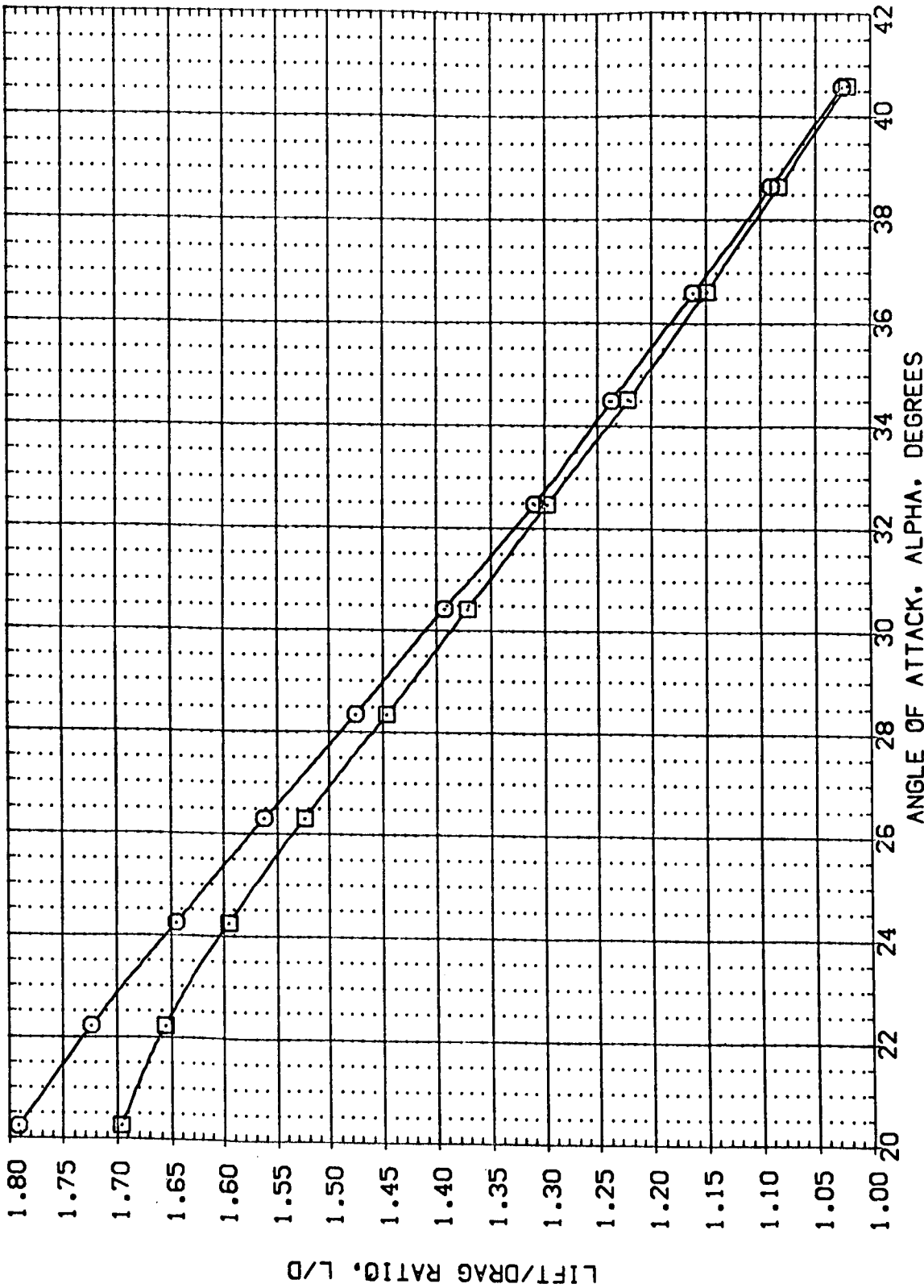


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPDBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 XREF 936.7000 IN.
 YMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

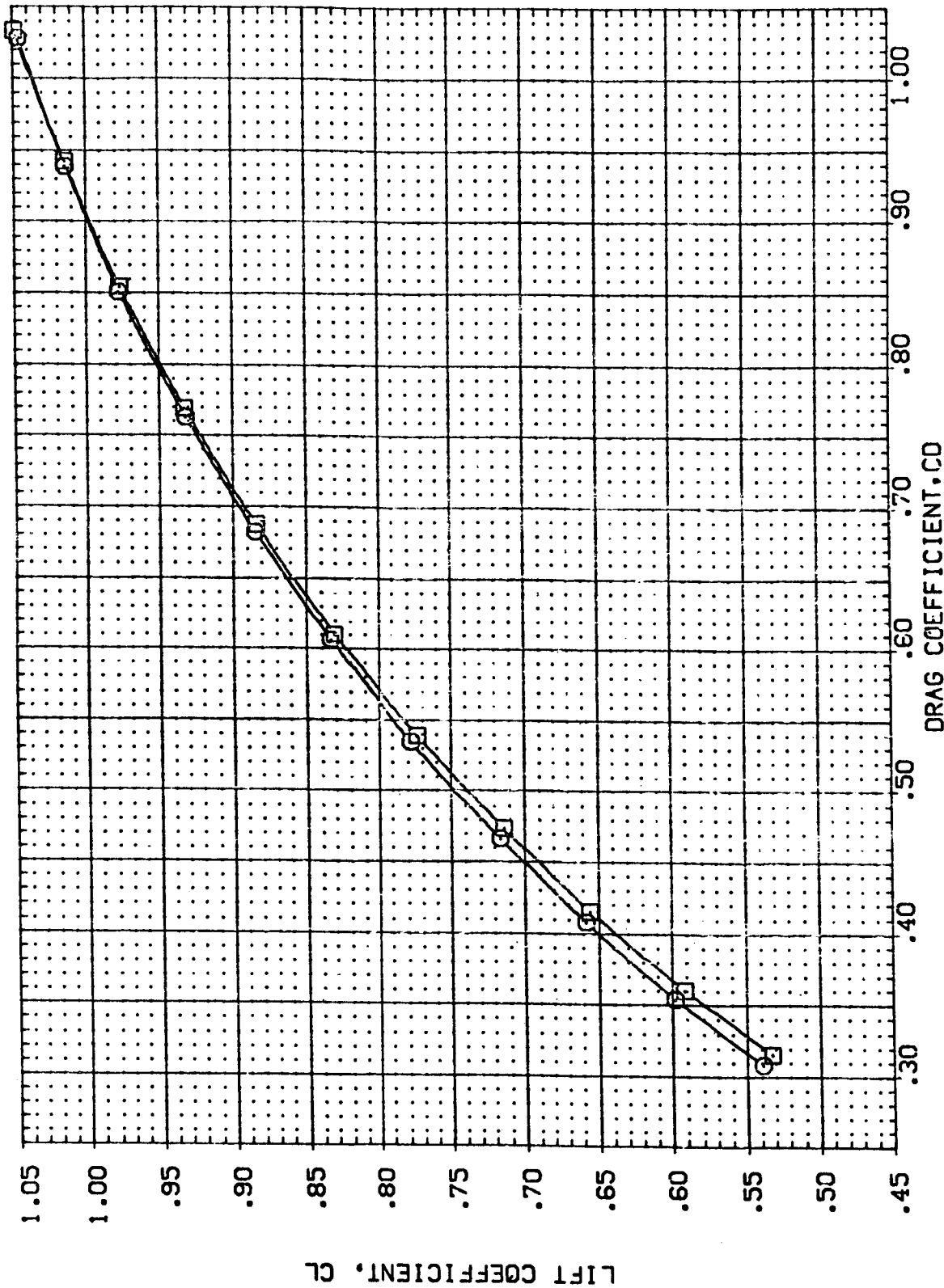


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOILERK	BDFLAP	REFERENCE INFORMATION
(F87065)	MSFC 574(OA48) ORB 139	.000	-40.000	999.990	-14.250	SREF 2690.0000 SQ.FT.
(F87112)	MSFC 574(OA48) ORB 139 Z1	.000	-40.000	999.990	-14.250	LREF 474.8000 IN.
						BREF 936.7000 IN.
						XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

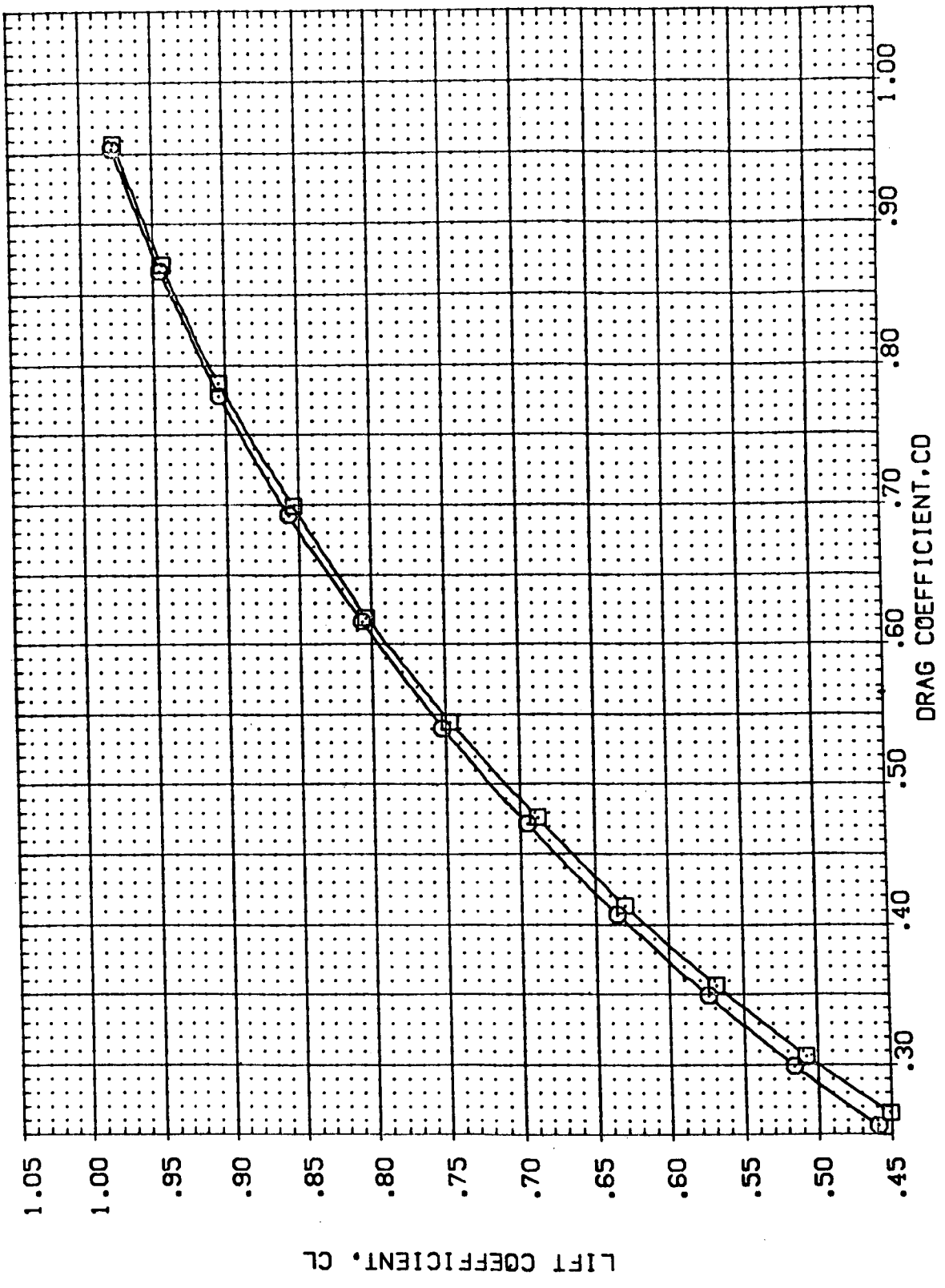


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (G87065) MSFC 574(0A48) ORB 139
 (G87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 854.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

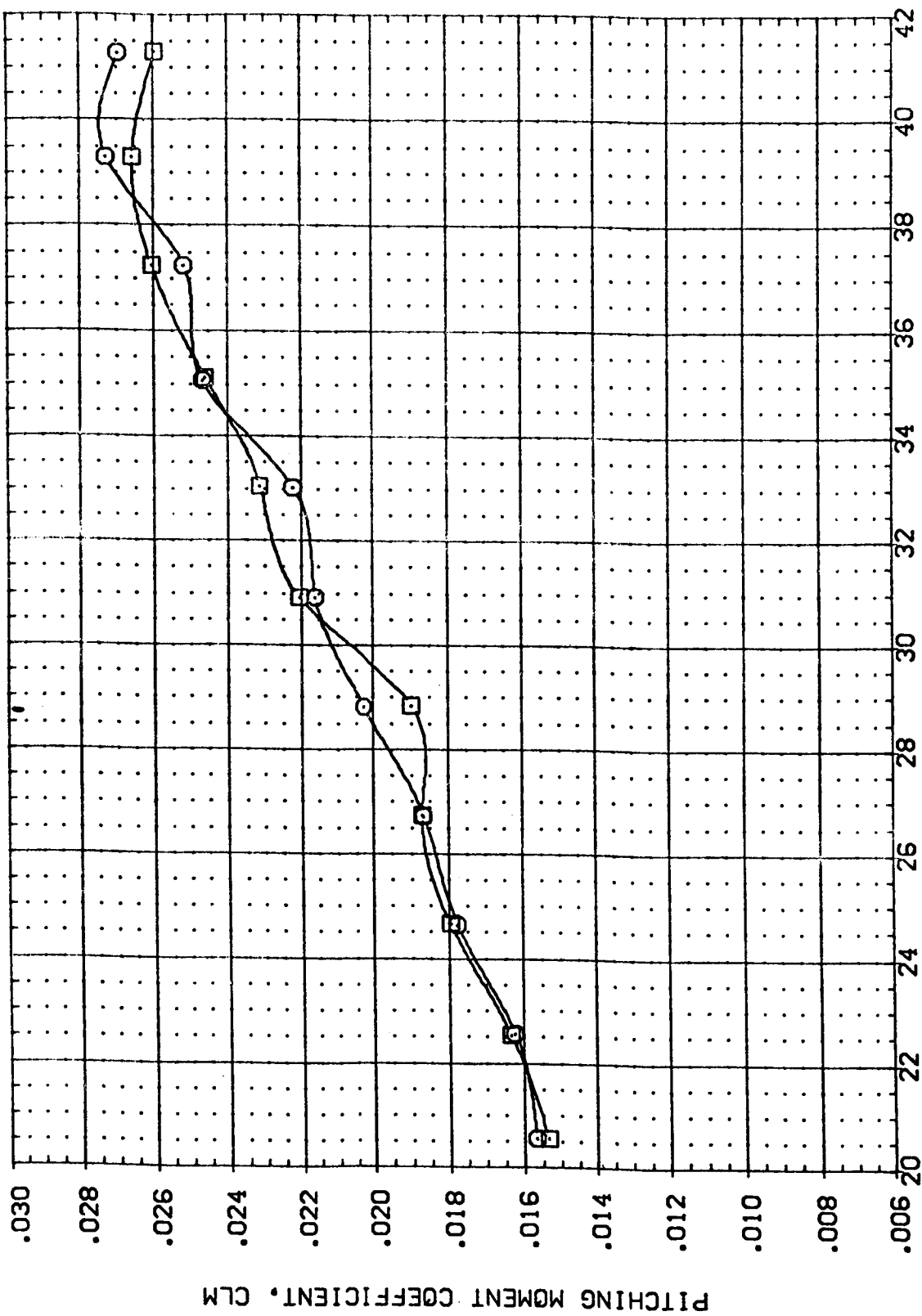


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139 (AFT C.G.)

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (037065) MSFC 574(0A48) ORB 139
 (037112) MSFC 574(0A48) ORB 139 Z1

BETA
 .000
 .000
 .000

ELEVTR
 -40.000
 -40.000
 -40.000

SPOBRK
 999.990
 999.990
 999.990

BOFLAP
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 864.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

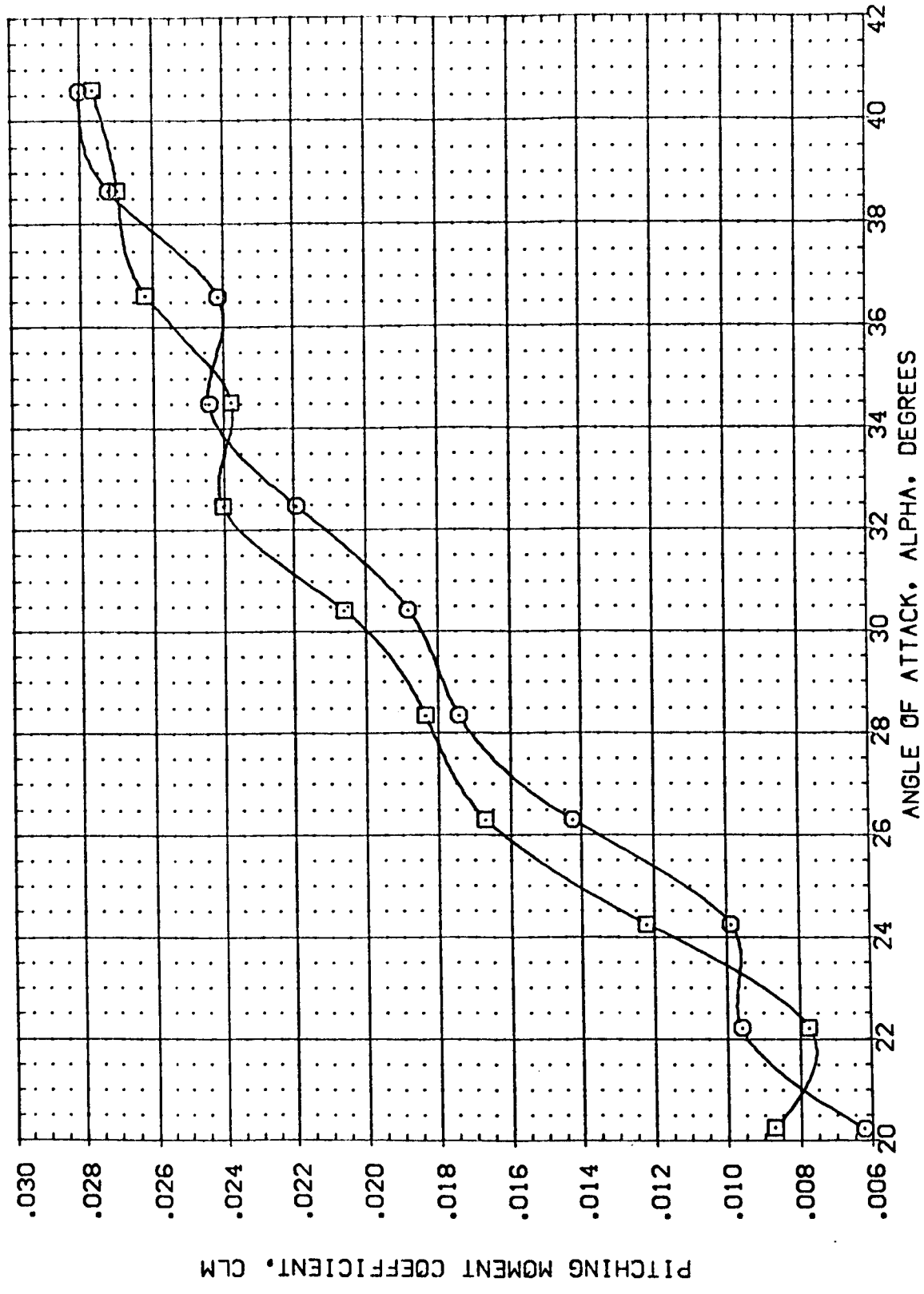


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139 (AFT C.G.)

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

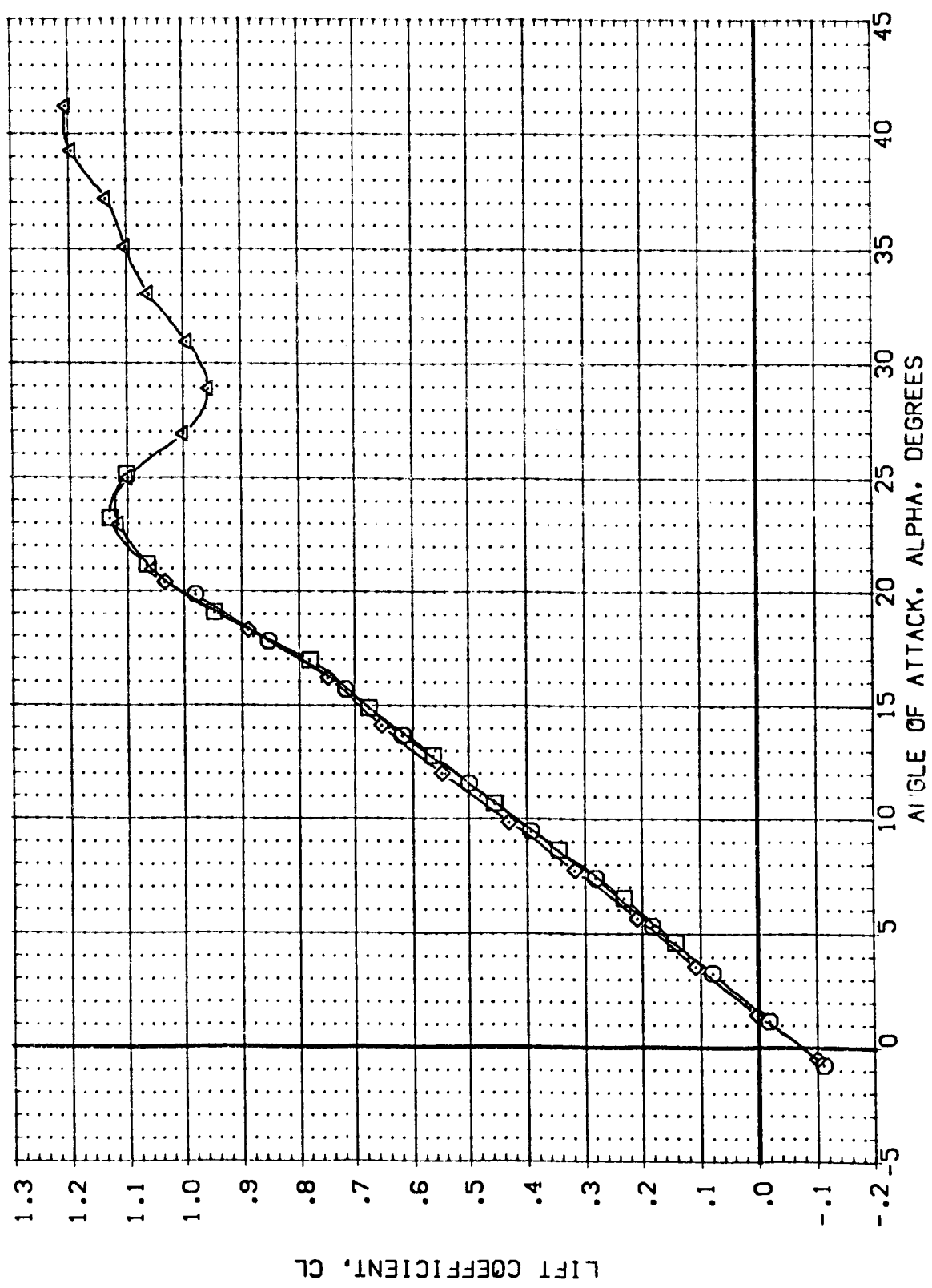


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) DRB 1398
 (F87002) MSFC 574(CA48) DRB 1398
 (F87003) MSFC 574(CA48) DRB 1398
 (F87007) MSFC 574(CA48) DRB 1398

BETA ELEVTR SPOBRK BLADPT REFERENCE INFORMATION
 .000 .000 999.990 2.000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 2.000 LREF 474.8000 IN.
 .000 .000 999.990 113.000 BREF 936.7000 IN.
 .000 .000 999.990 113.000 XMRP 838.7000 IN.
 .000 .000 999.990 113.000 YMRP .0000 IN.
 .000 .000 999.990 113.000 ZMRP .0000 IN.
 SCALE .0040

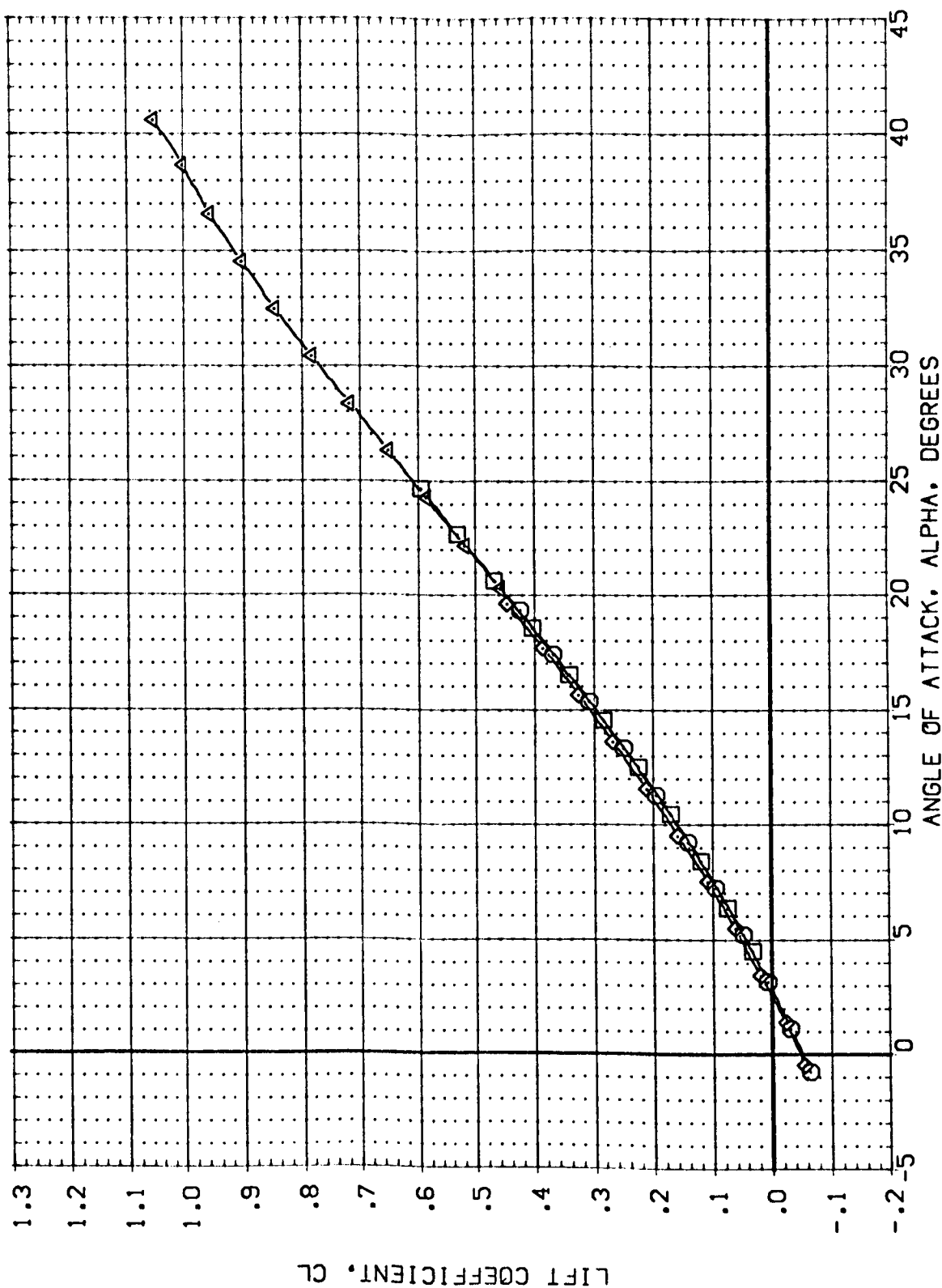


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	113.000	SREF 936.7000 IN.
(F87007)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000
						ZMRP .0000
						SCALE .0040

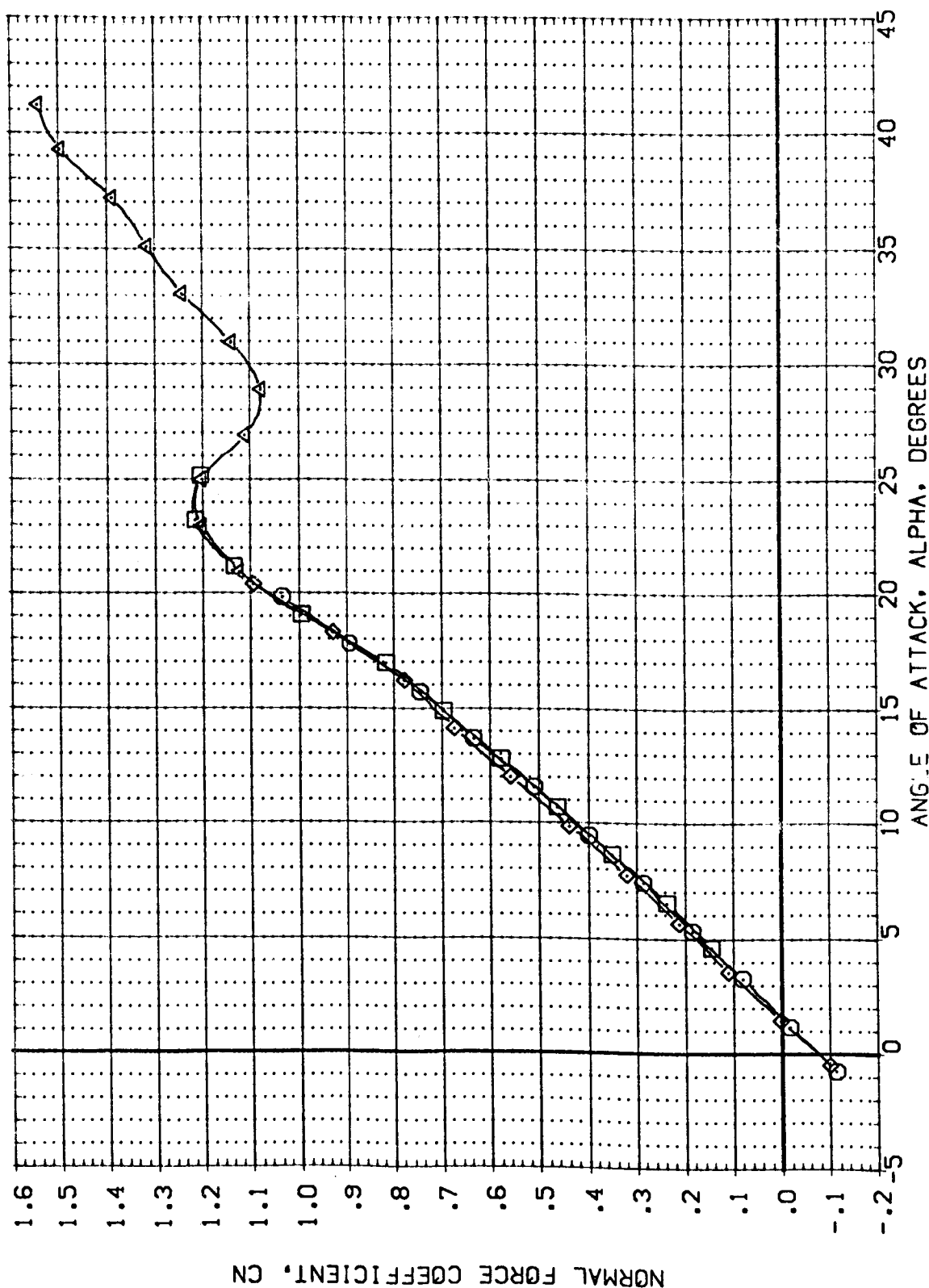


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE	INFORMATION
.000	.000	999.990	2.000	SREF	2690.0000 SC.F.T.
.000	.000	999.990	2.000	LREF	474.8000
.000	.000	999.990	113.000	BREF	936.7000
.000	.000	999.990	113.000	YMRP	838.7000
.000	.000	999.990		YMRP	.0000
				ZMRP	.0000
				SCALE	.0040

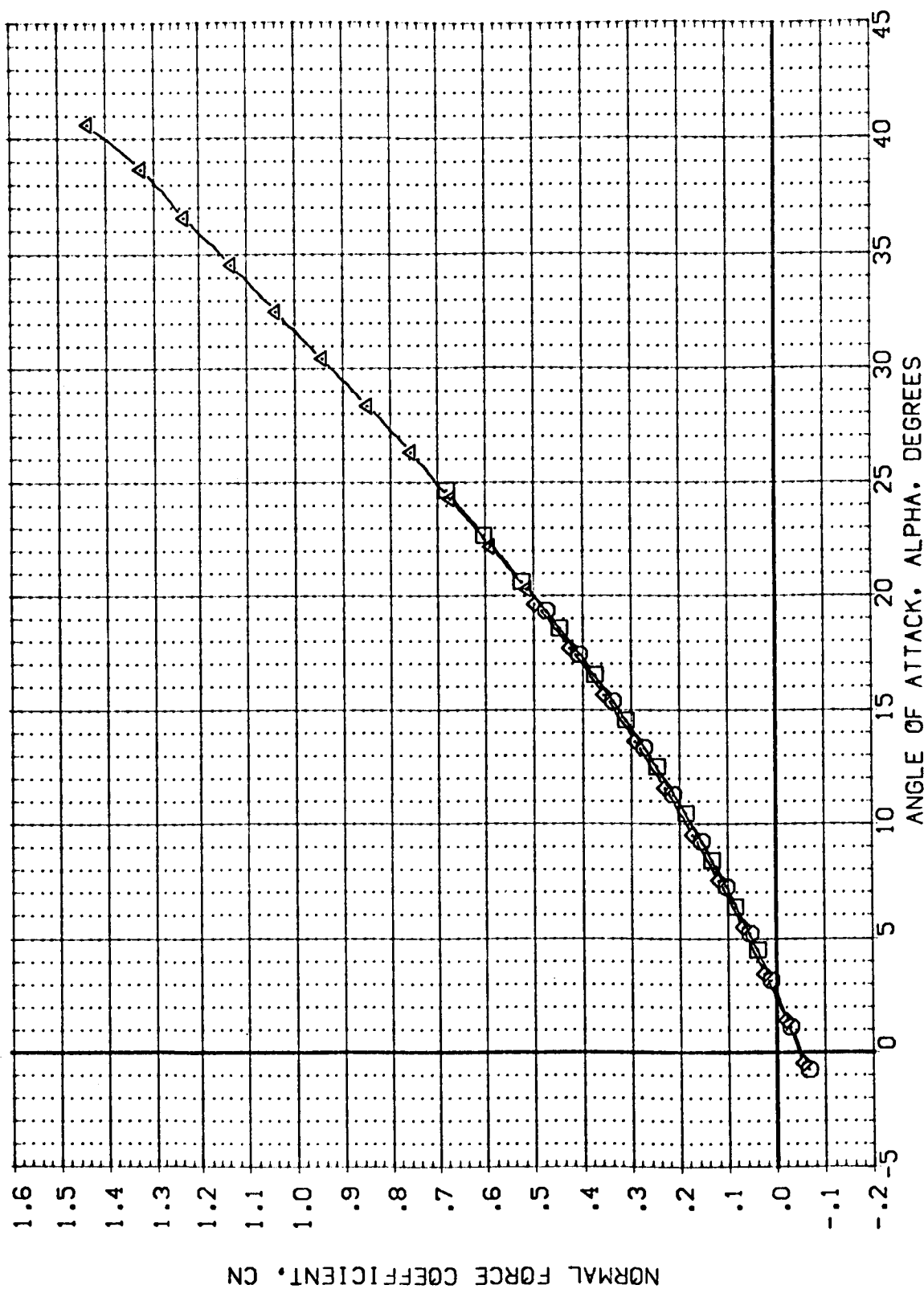


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) ORB 1398
 (F87002) MSFC 574(CA48) ORB 1399
 (F87003) MSFC 574(CA48) ORB 1398
 (F87007) MSFC 574(CA48) ORB 1398

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 50.0
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

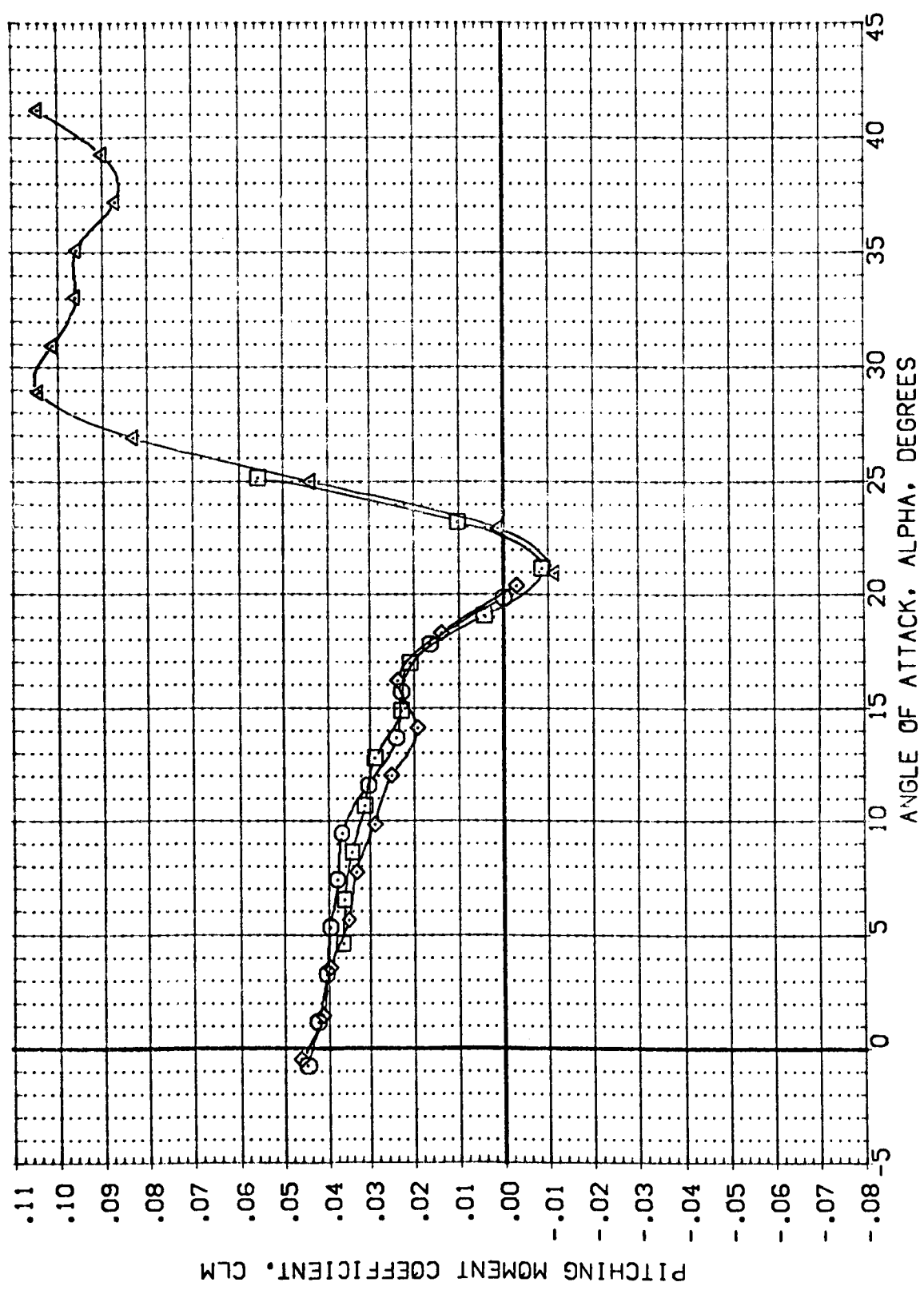


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

CAJ MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SG.F.T.
(F87002)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000
(F87003)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000
(F87004)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

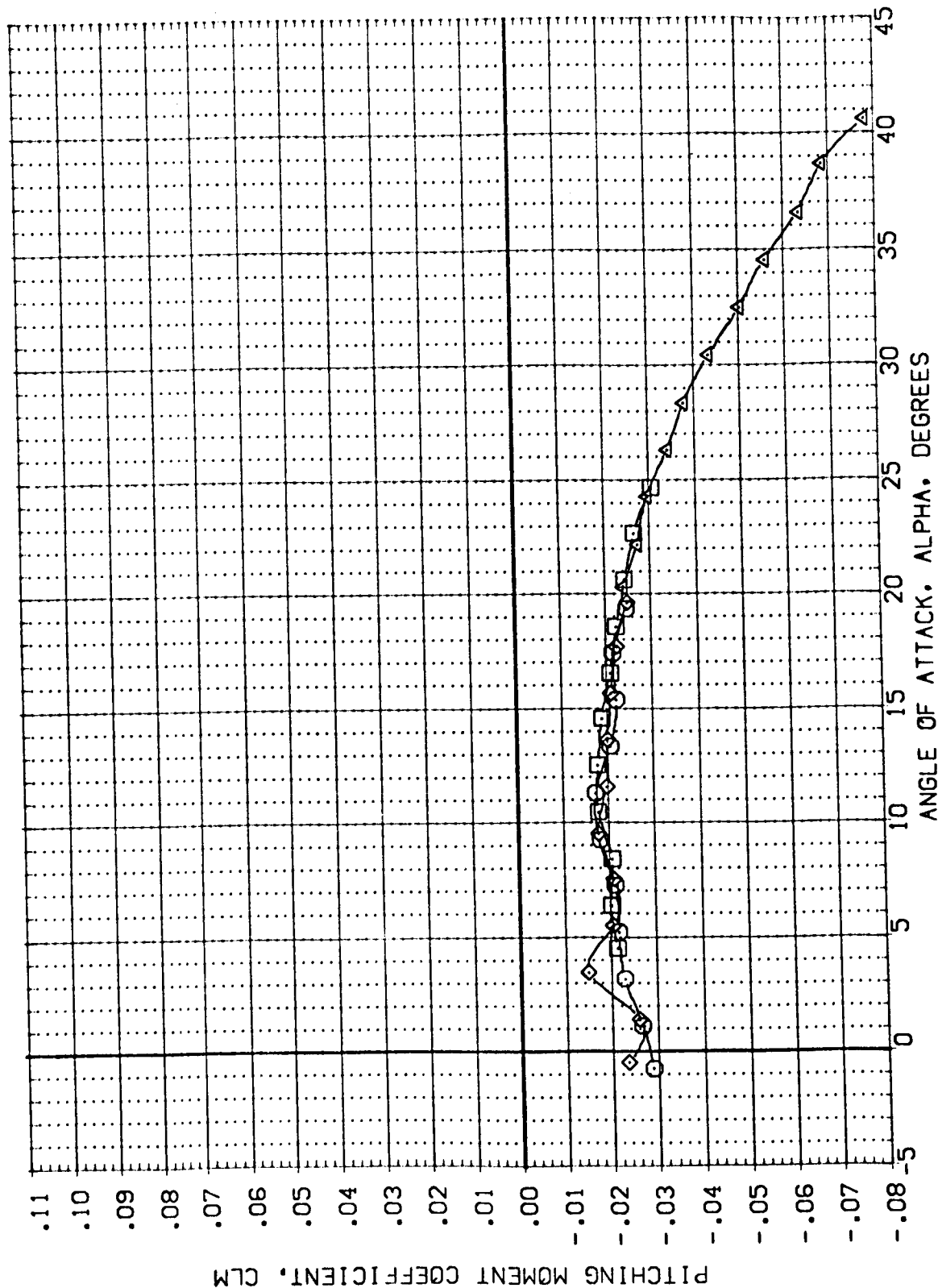


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

U L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000 N.
(F87003)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000 N.
(F87007)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000 N.
						YMRP .0000 N.
						ZMRP .0000 N.
						SCALE .0040

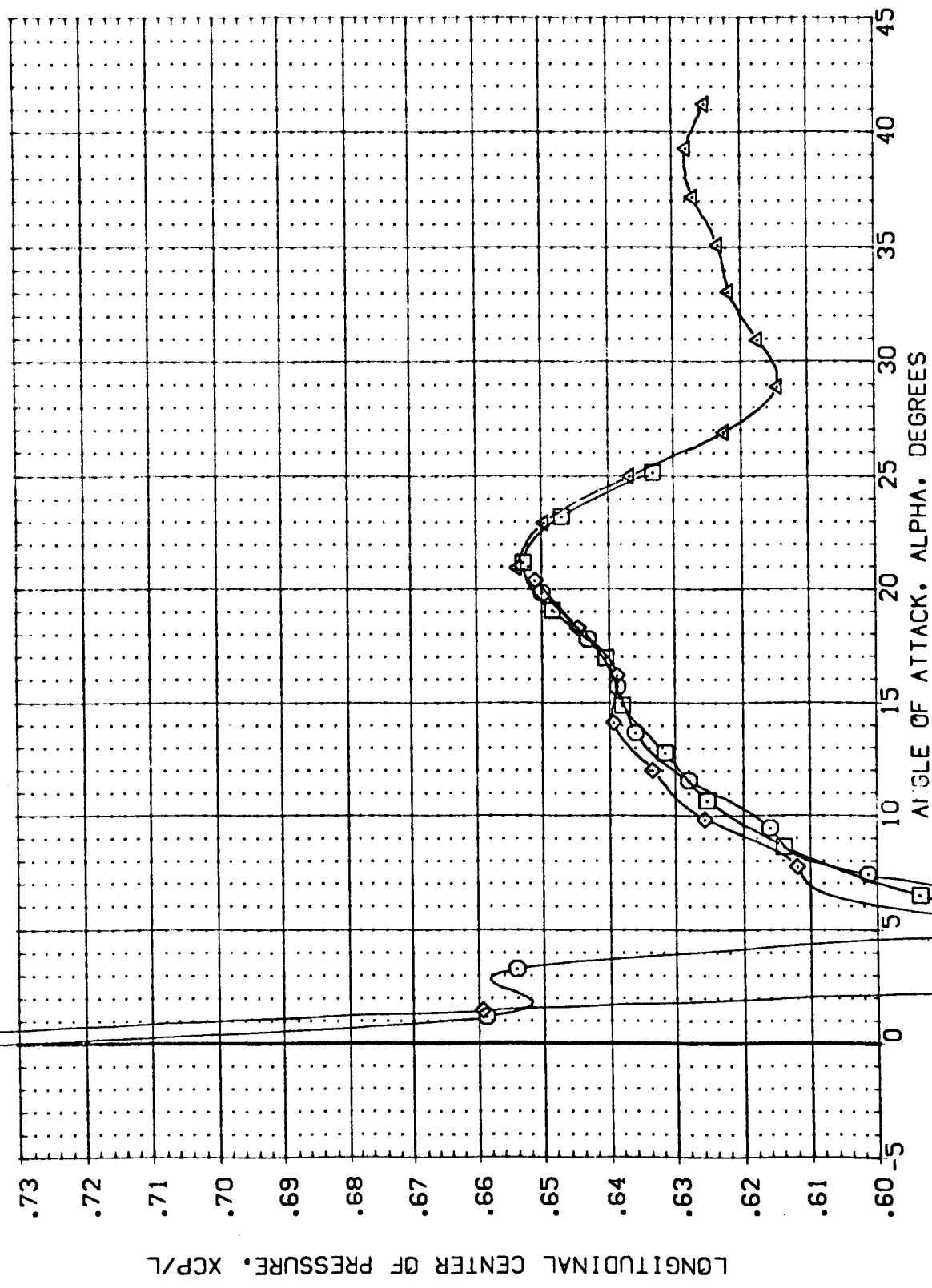


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(OA48) CRB 1398
 (F87002) MSFC 574(OA48) CRB 1398
 (F87003) MSFC 574(OA48) CRB 1398
 (F87004) MSFC 574(OA48) CRB 1398

BETA ELEVTR SPOBRK BLADPT REFERENCE INFORMATION
 .000 .000 999.990 2.000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 2.000 LREF 474.8000 IN.
 .000 .000 999.990 113.000 BREF 936.7000 IN.
 .000 .000 999.990 113.000 XMRP 838.7000 IN.
 .000 .000 999.990 113.000 YMRP .0000
 .000 .000 999.990 113.000 ZMRP .0000
 .000 .000 999.990 113.000 SCALE .0040

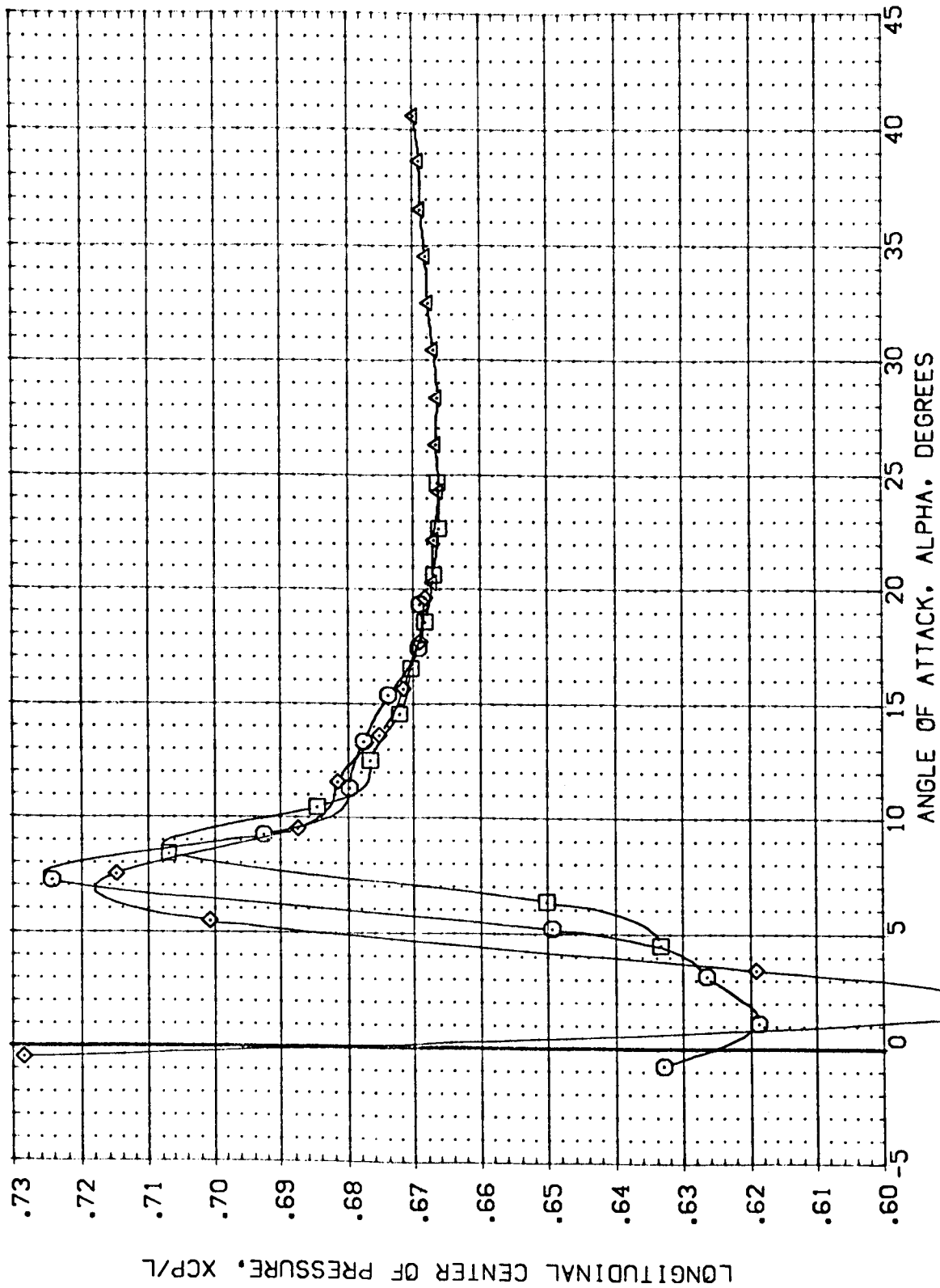


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(DA48) ORB 1398	.000	.000	999.990	2.000	SREF 2690.0000
(F87002)	MSFC 574(DA48) ORB 1398	.000	.000	999.990	2.000	LREF 474.8000
(F87006)	MSFC 574(DA48) ORB 1398	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSFC 574(DA48) ORB 1398	.000	.000	999.990	113.000	XMPP 838.7000
						YMPP .0000
						ZMPP .0000
						SCALE .0040

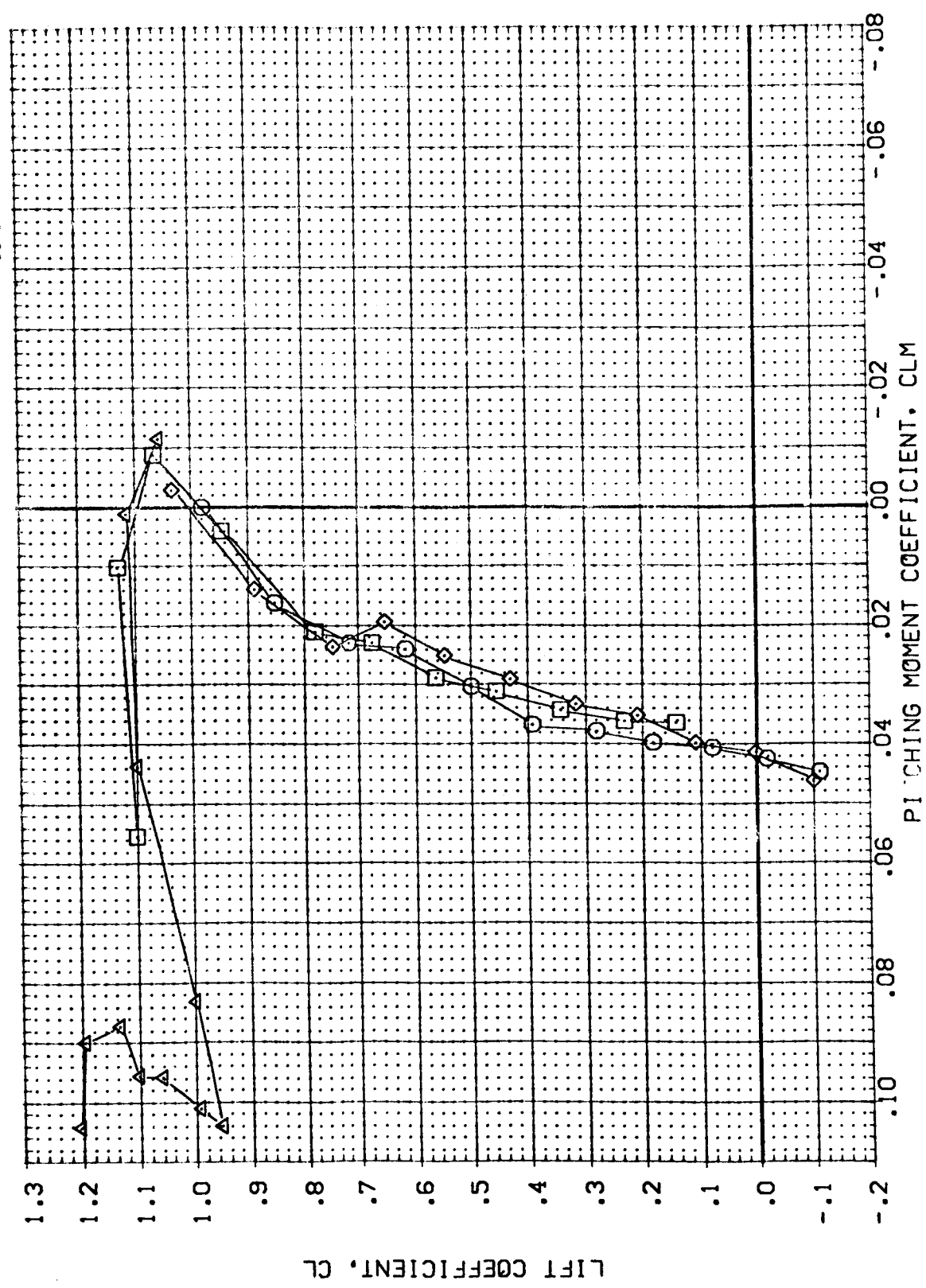


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.F.T.
(F87002)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000
						ZMRP .0000
						SCALE .0040

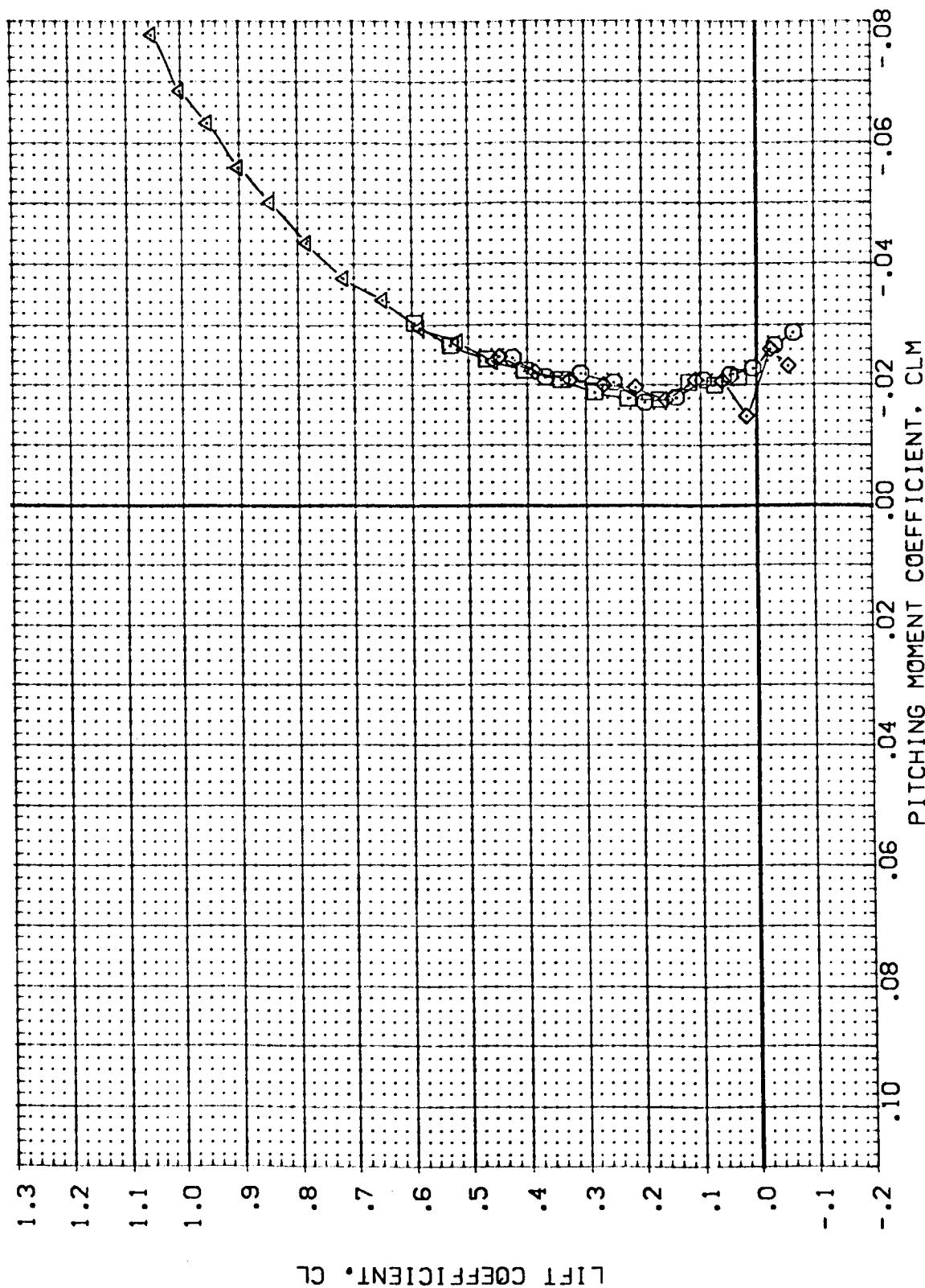


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION	SC.FT.
(F87001)	MSFC 574 (0A48) ORB 1398	.000	.000	999.990	2.000	SREF	2690.0000
(F87002)	MSFC 574 (0A48) ORB 1398	.000	.000	999.990	2.000	LREF	474.8000
(F87006)	MSFC 574 (0A48) ORB 1398	.000	.000	999.990	113.000	BREF	936.7000
(F87007)	MSFC 574 (0A48) ORB 1398	.000	.000	999.990	113.000	XMRP	836.7000
						YMRP	.0000
						ZMRP	.0000
						SCALE	.0040



FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) CRB 1398
 (F87002) MSFC 574(CA48) C-8 1398
 (F87006) MSFC 574(CA48) CRB 1398
 (F87007) MSFC 574(CA48) CRB 1398

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

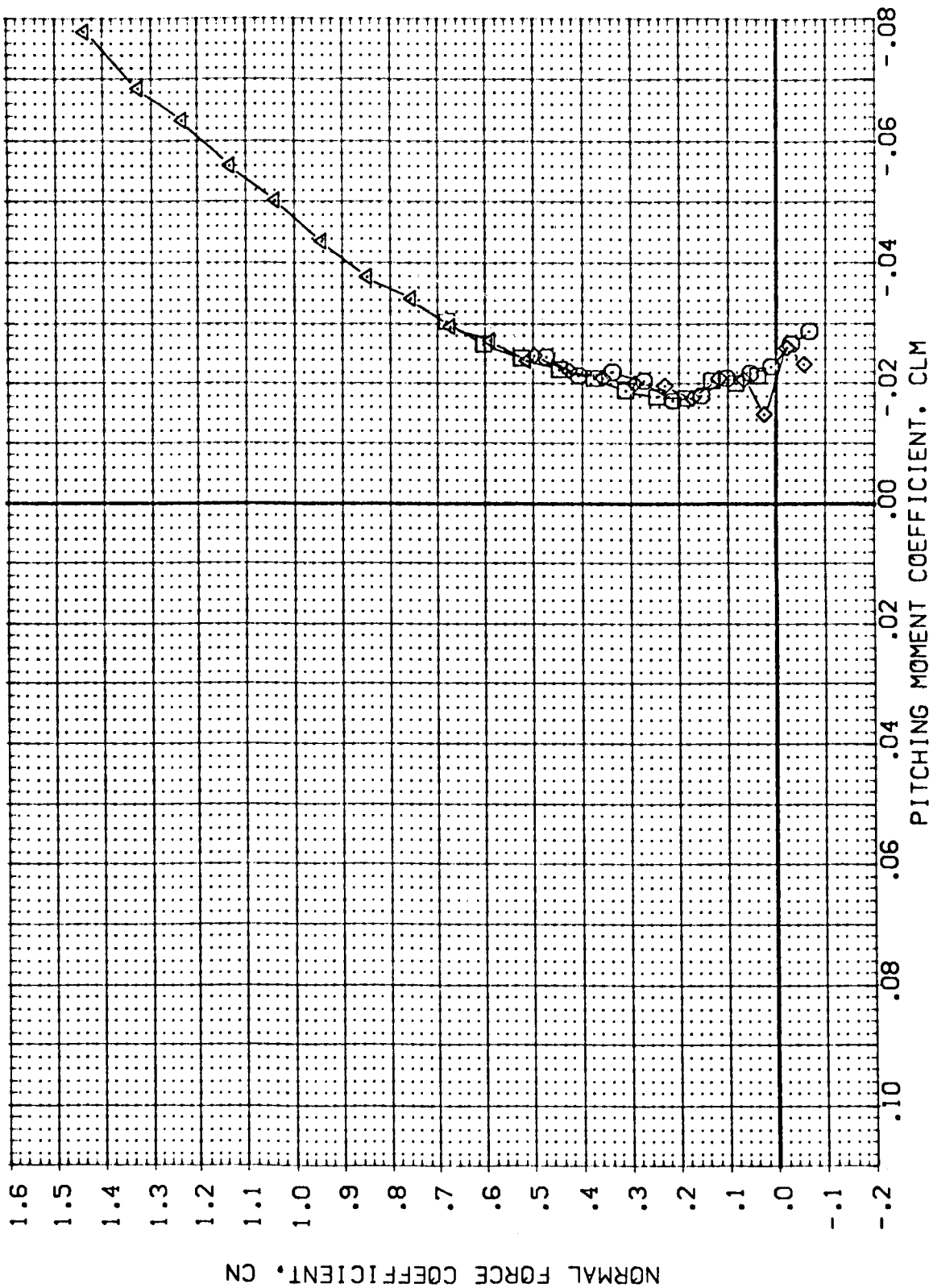


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) CRB 1393
 (F87002) MSFC 574(CA48) CRB 1393
 (F87006) MSFC 574(CA48) CRB 1393
 (F87007) MSFC 574(CA48) CRB 1393

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

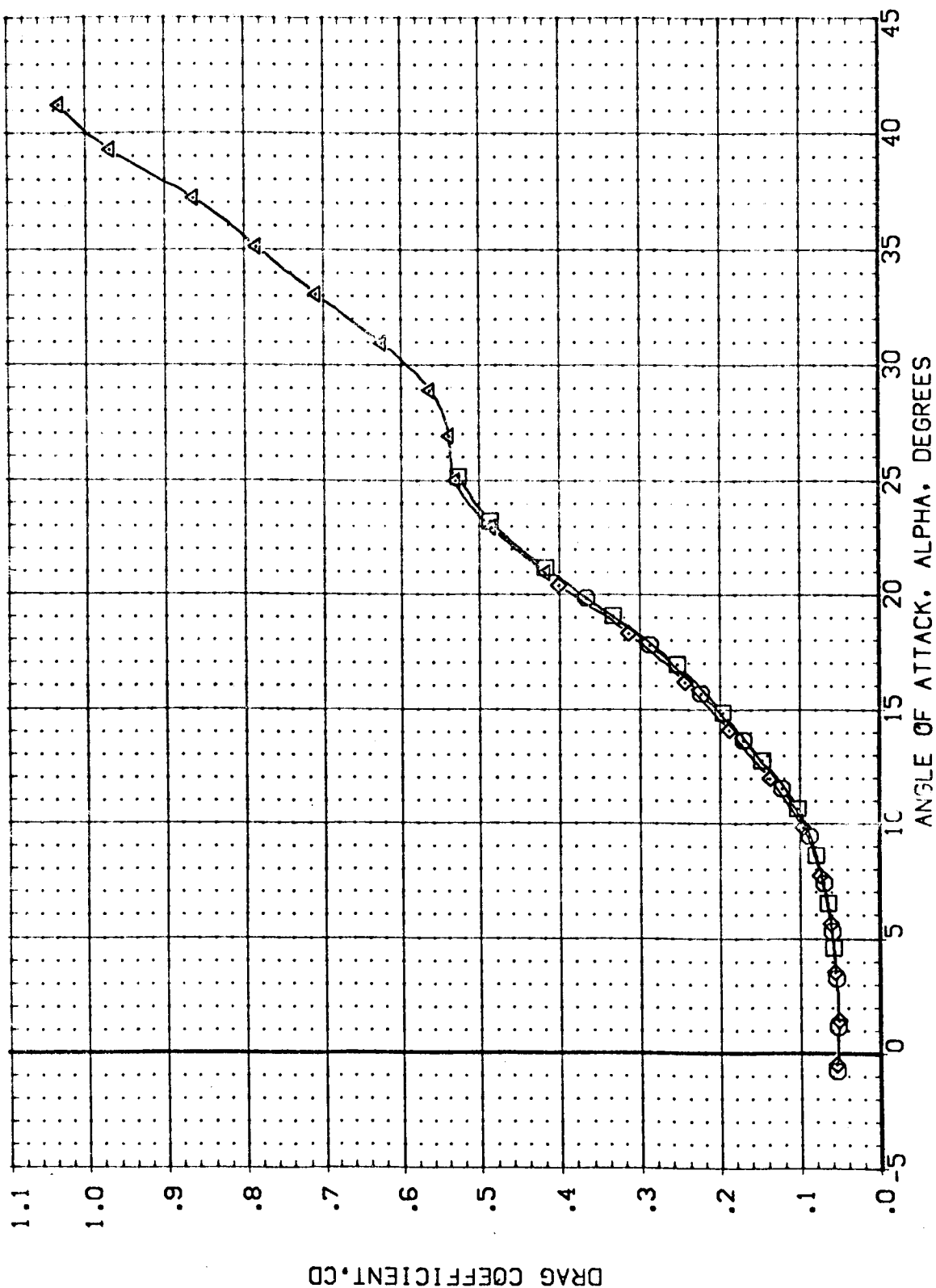






FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001)  MSFC 574(CA48) CR8 1398
 (F87002)  MSFC 574(CA48) CR8 1398
 (F87003)  MSFC 574(CA48) CR8 1398
 (F87004)  MSFC 574(CA48) CR8 1398

BETA .000
 ELEVTR .000
 SPOBRK 999.990
 BLADPT 2.000
 REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040
 SC.FT. N.

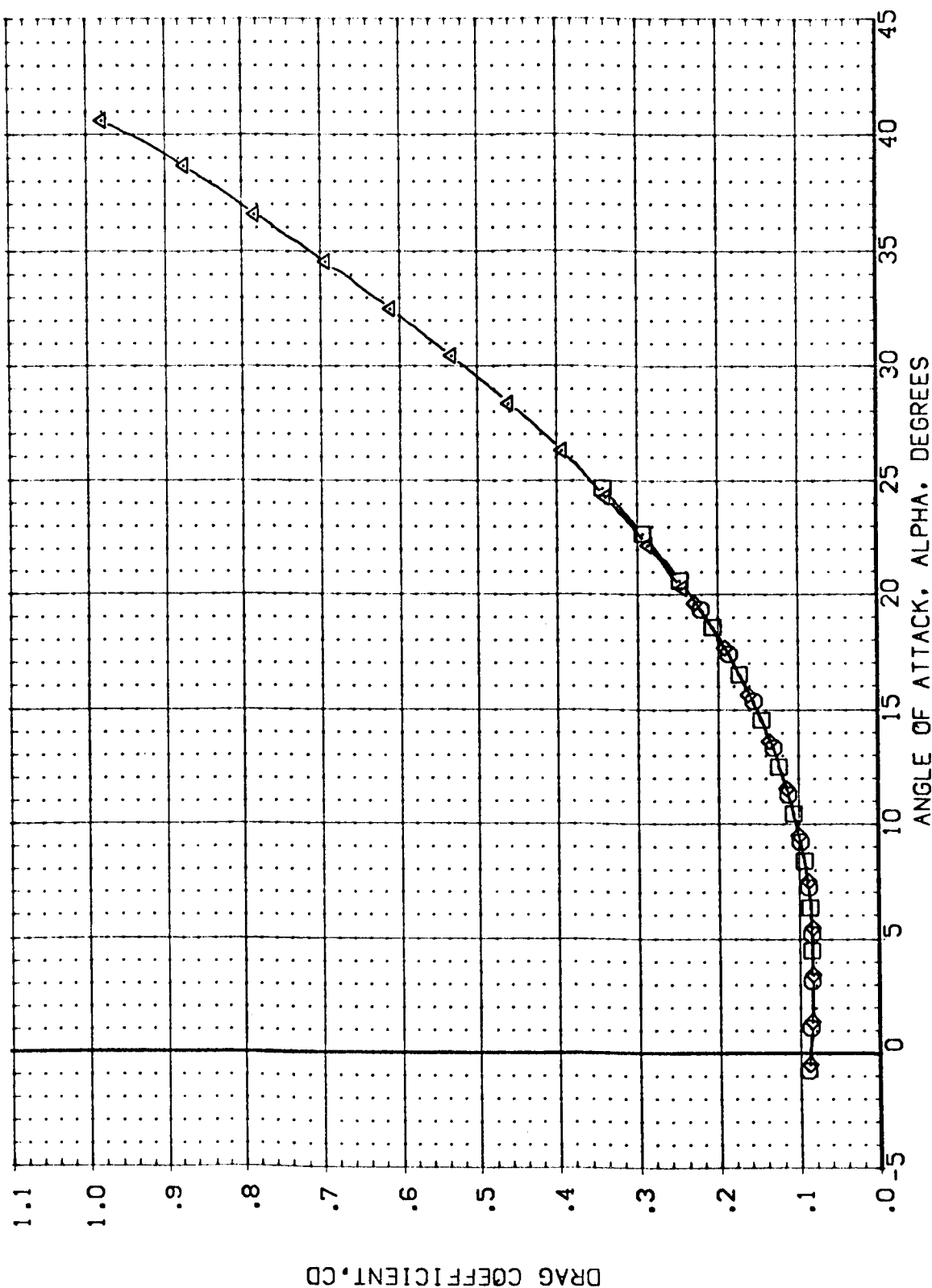


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOSBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	113.000	XREF 838.7000 IN.
						YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

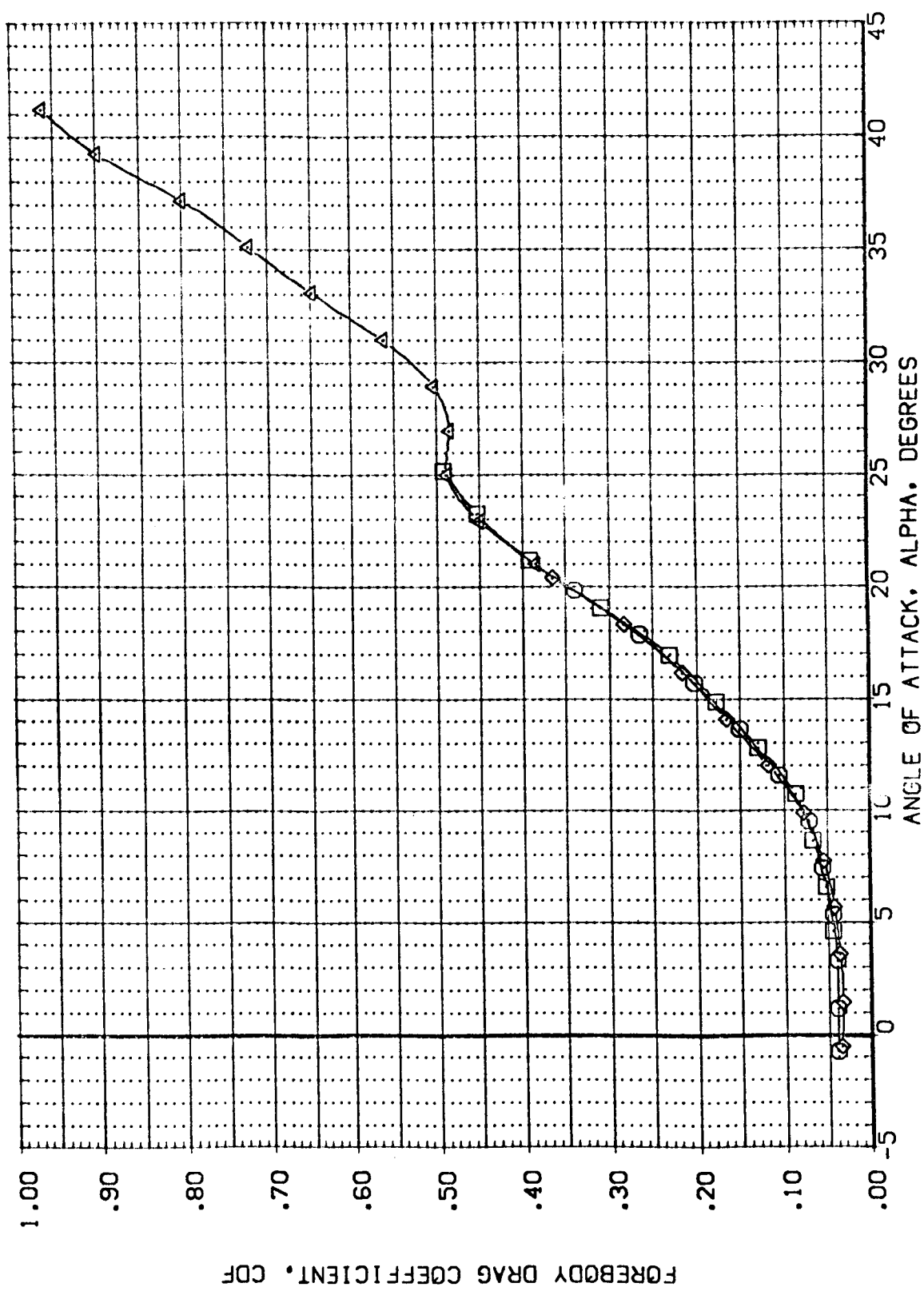


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE	INFORMATION
.000	.000	999.990	2.000	SREF	2690.0000
.000	.000	999.990	2.000	REF	474.8000
.000	.000	999.990	113.000	BRF	836.7000
.000	.000	999.990	113.000	XRP	838.7000
.000	.000	999.990		YRP	.0000
				ZMRP	.0000
				SCALE	.0040

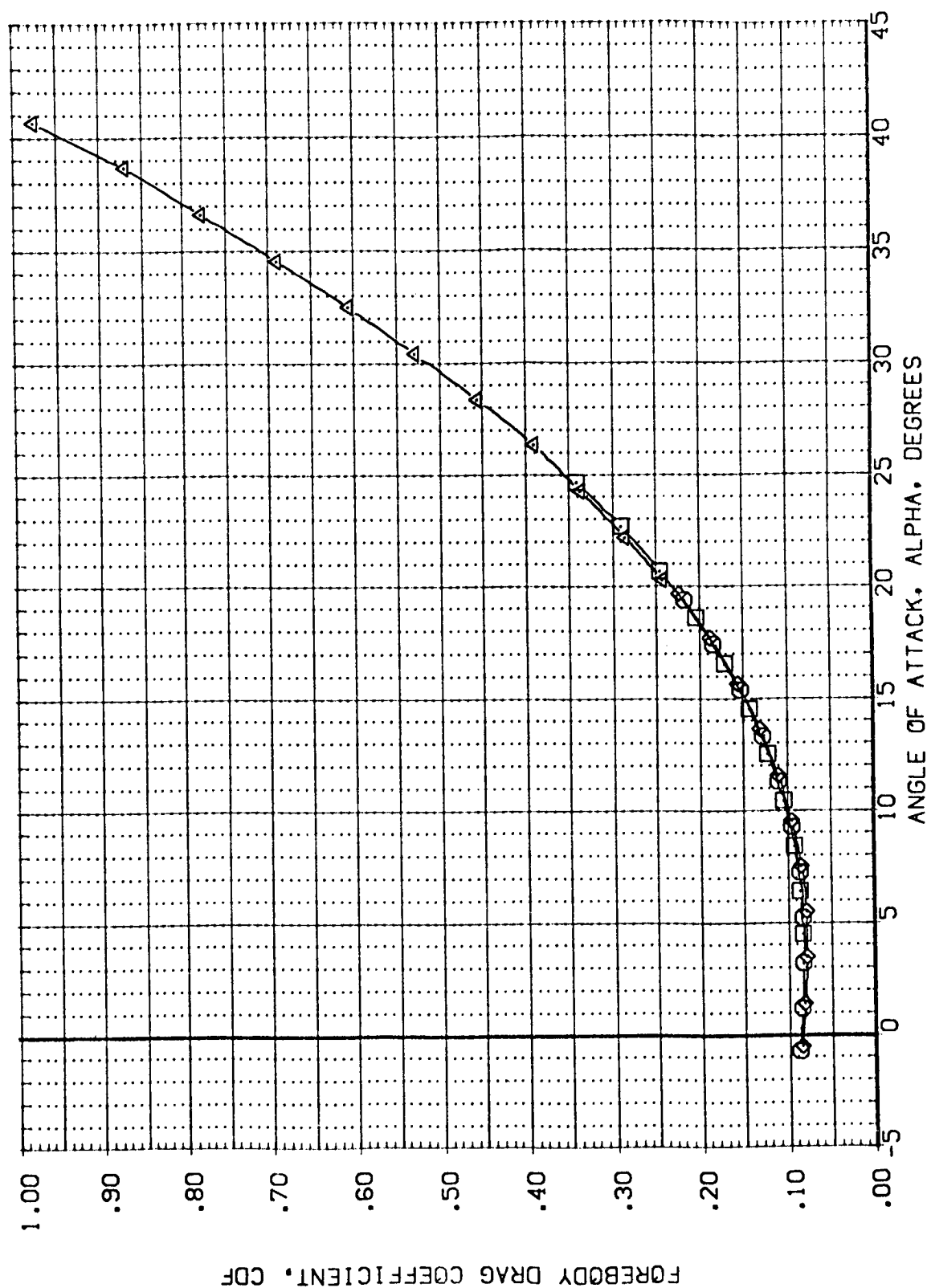


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET.

(B)MACH = 4.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(DA48) CR8 1398	.000	.000	999.990	2.000	SREF 2650.0000 SQ.FT.
(F87002)	MSFC 574(DA48) CR8 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87003)	MSFC 574(DA48) CR8 1398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(DA48) CR8 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000
						ZMRP .0000
						SCALE .0040

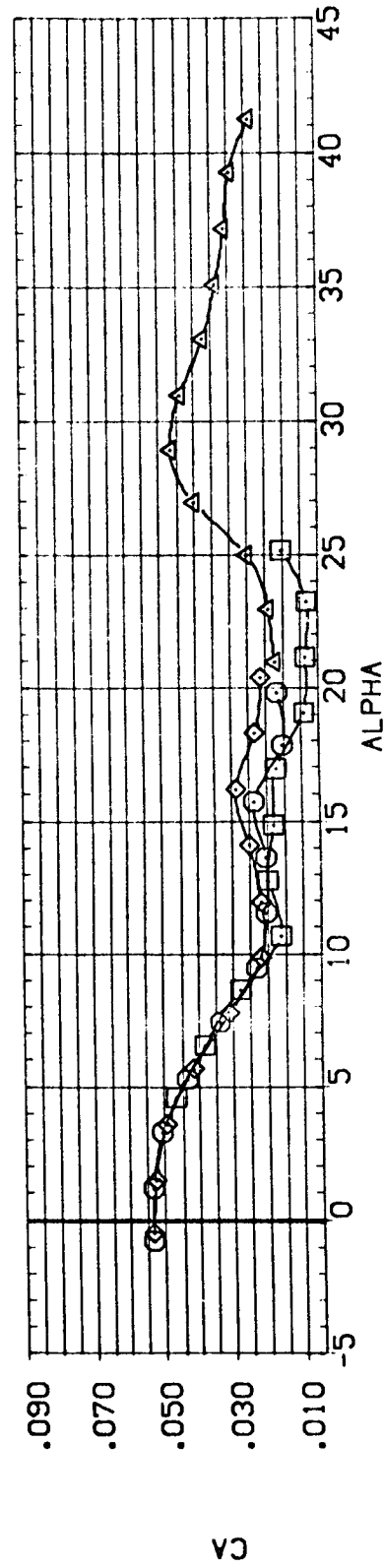
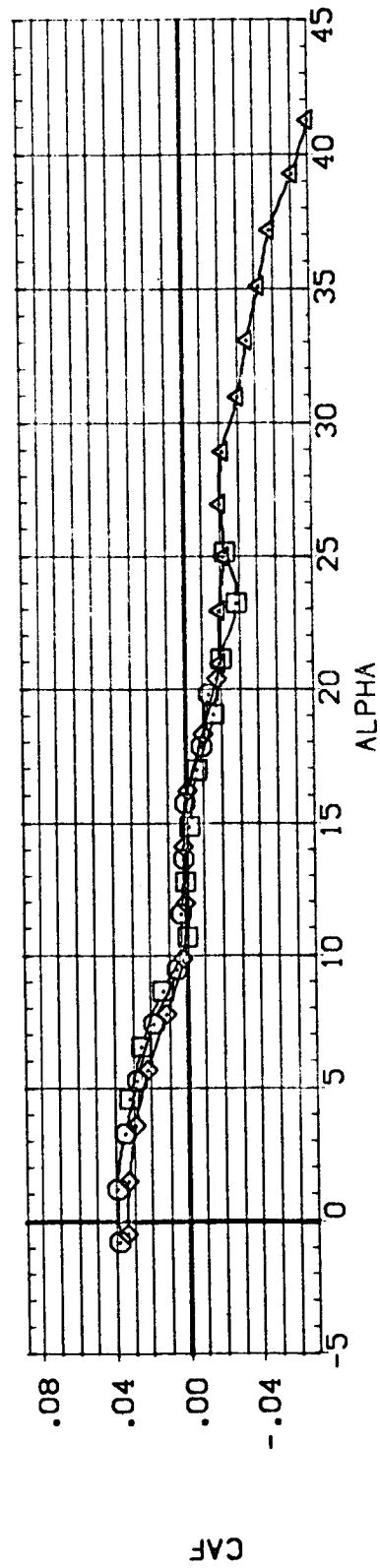
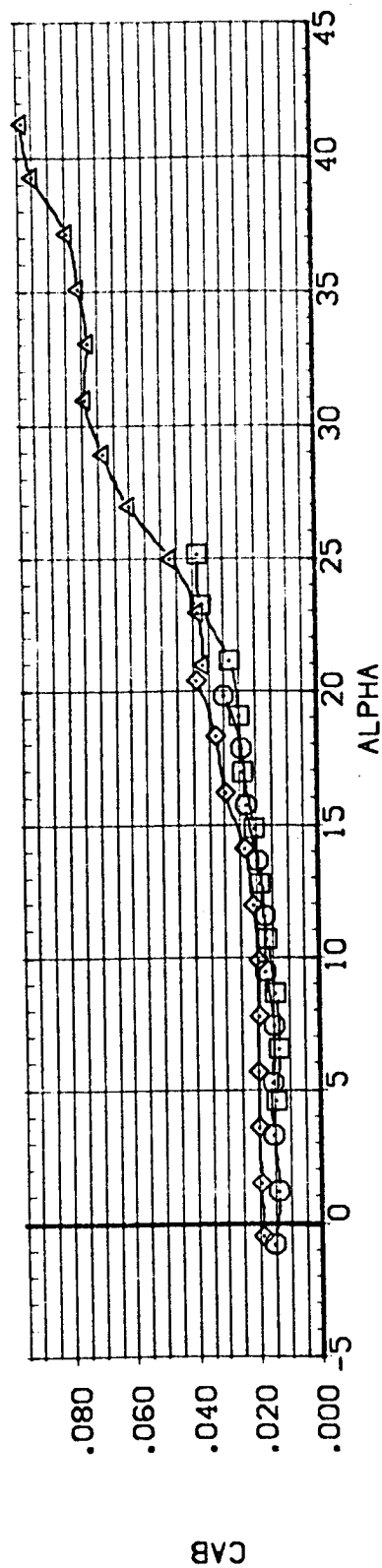


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001) MSFC 574(OA48) DRB 1399

(F87002) MSFC 574(OA48) DRB 1399

(F87005) MSFC 574(OA48) DRB 1399

(F87007) MSFC 574(OA48) DRB 1399

BETA

ELEVTR

SPOBRK

BLADPT

REFERENCE INFORMATION

SREF 2690.0000 SQJ.T.

LREF 474.8000 IN.

BREF 936.7000 N.

XMRP 838.7000 N.

YMRP .0000 N.

ZMRP .0000 N.

SCALE .0010

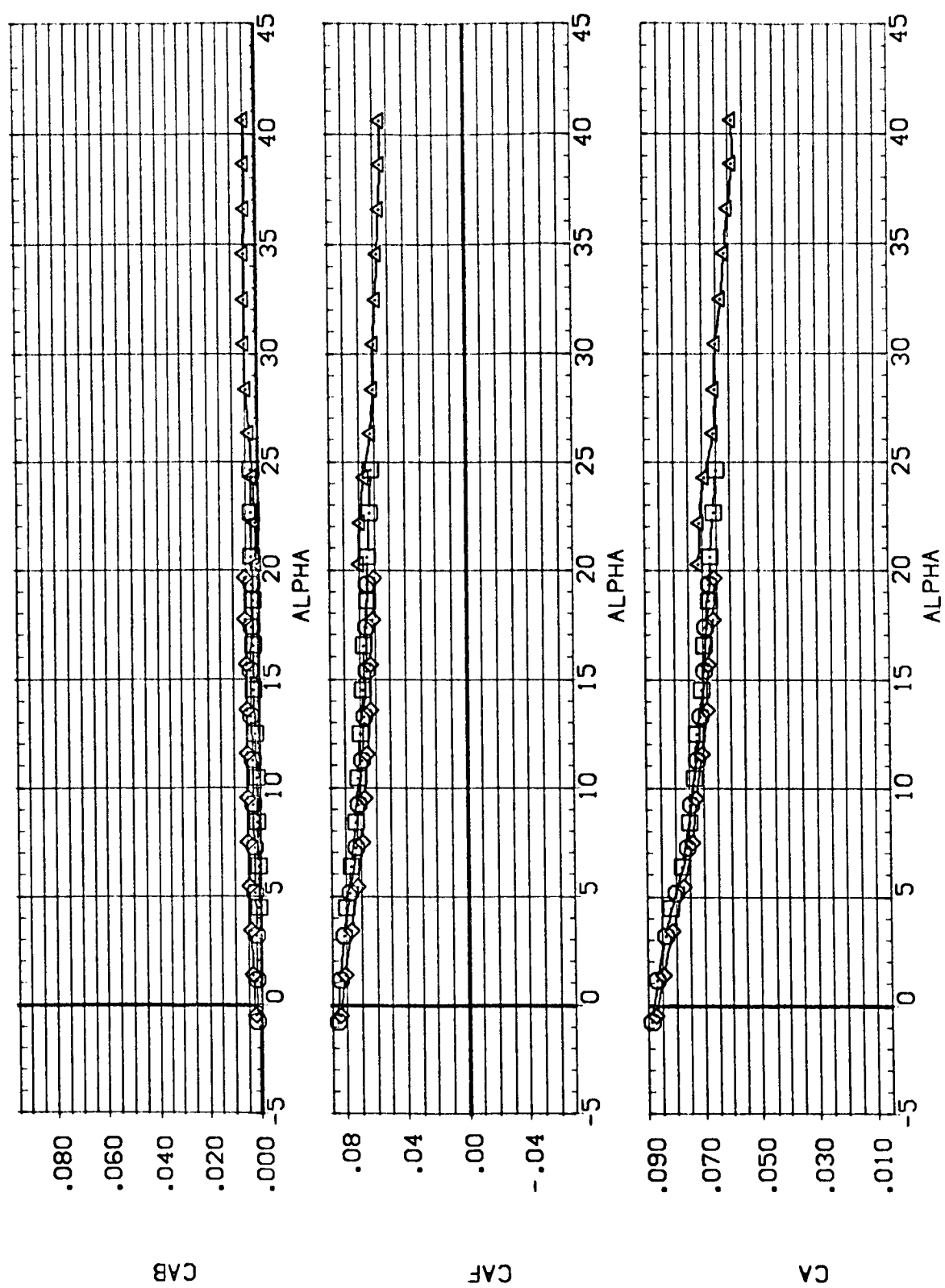


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SG.F.T.
(F87002)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000 N.
(F87006)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000 N.
(F87007)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000 N.
						VMRP .0000 N.
						ZMRP .0000 N.
						SCALE .0040

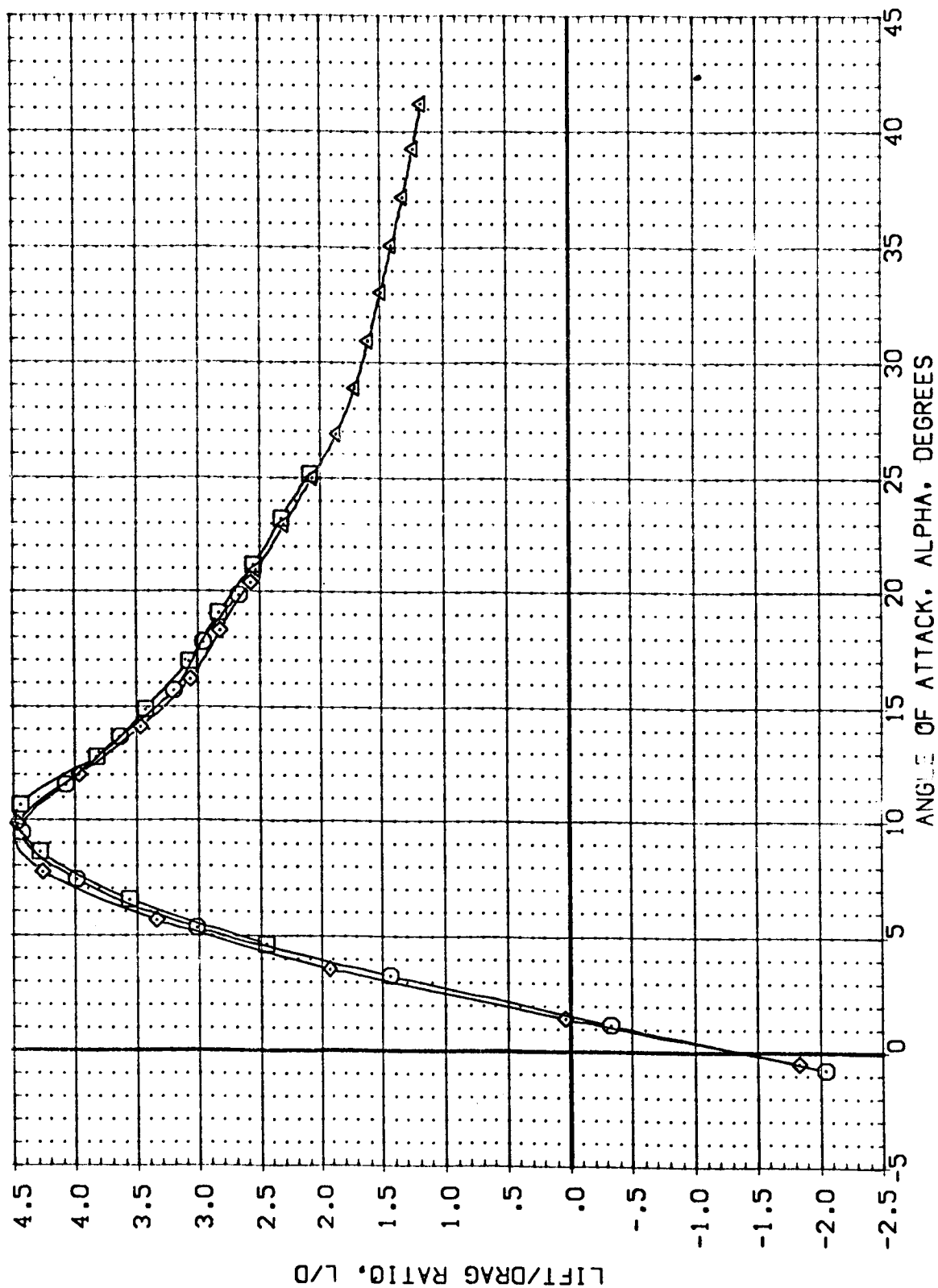


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(F87001)	MSFC 574 (CA48)	ORB 139B
(F87002)	MS-C 574 (CA48)	ORB 139B
(F87003)	MSFC 574 (CA48)	ORB 139B
(F87006)	MSFC 574 (CA48)	ORB 139B

BETA	ELEVTR	SPOBRK	BLADPT
.000	.000	999.990	2.000
.000	.000	999.990	2.000
.000	.000	999.990	113.000
.000	.000	999.990	113.000

REFERENCE INFORMATION	
SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMRP	838.7000
VMRP	.0000
ZMRP	.0000
SCALE	.0040

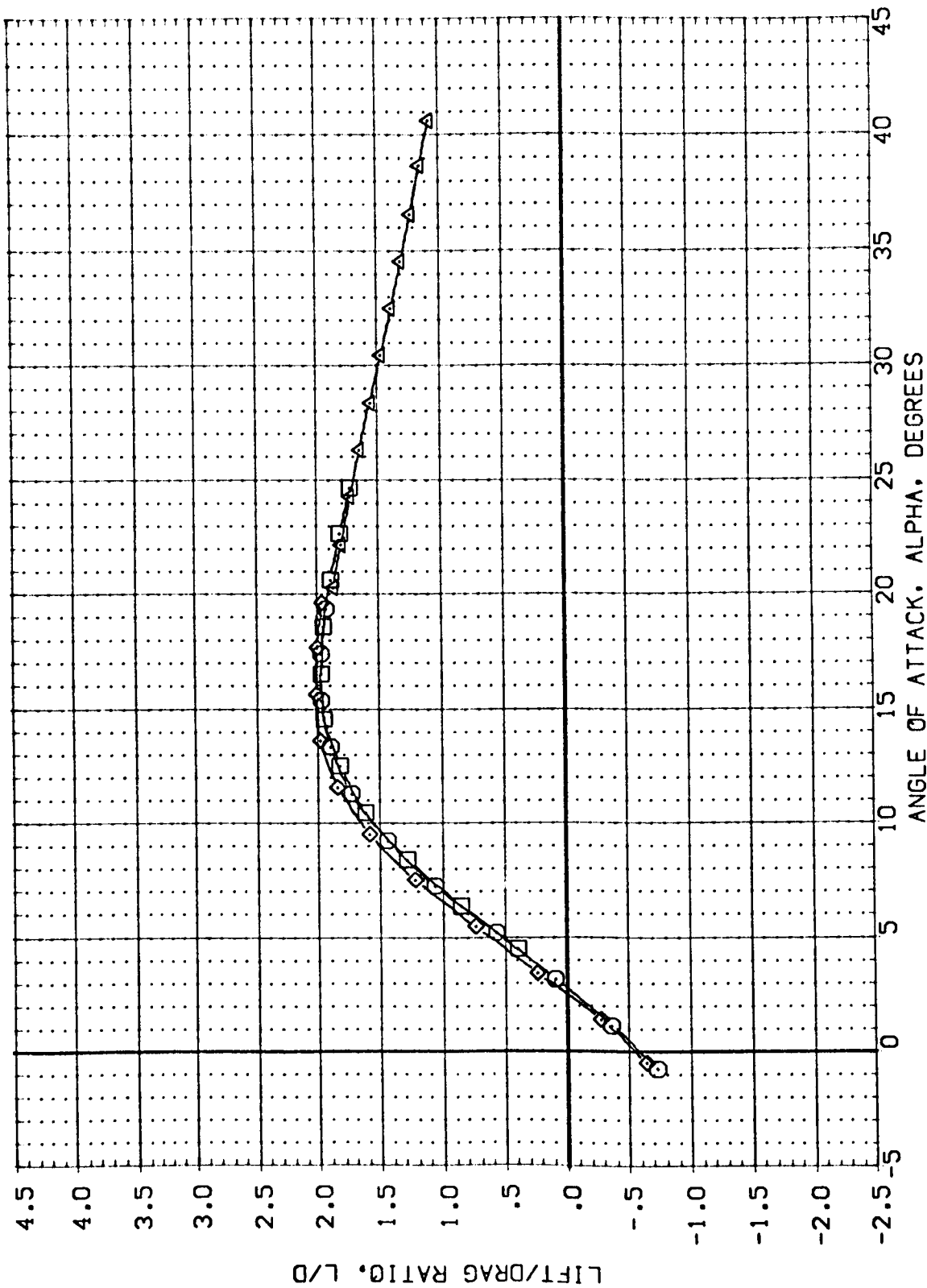


FIG. 20. EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87003)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

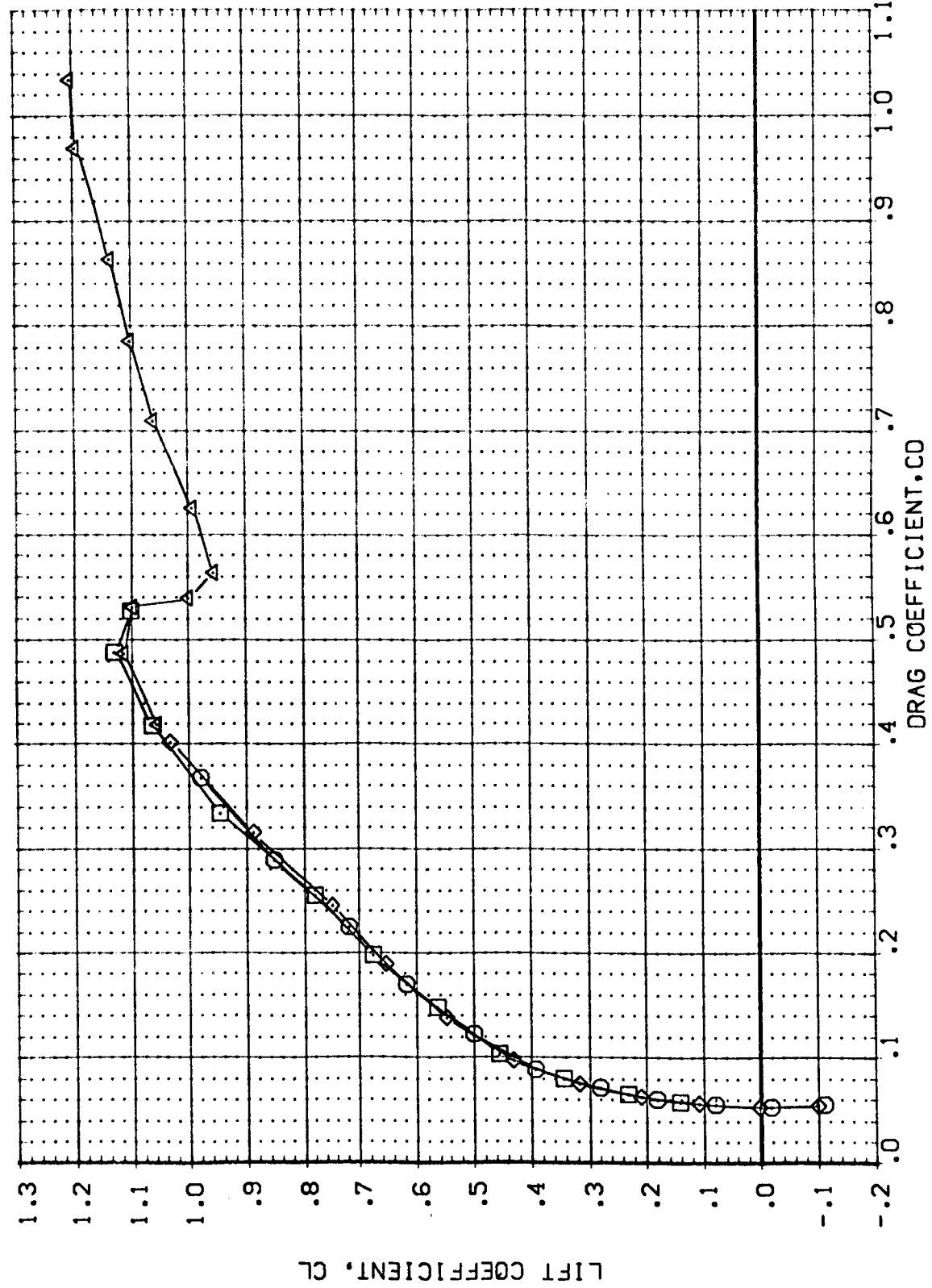


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(0A48) ORB 139B	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(0A48) ORB 139B	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87003)	MSFC 574(0A48) ORB 139B	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(0A48) ORB 139B	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

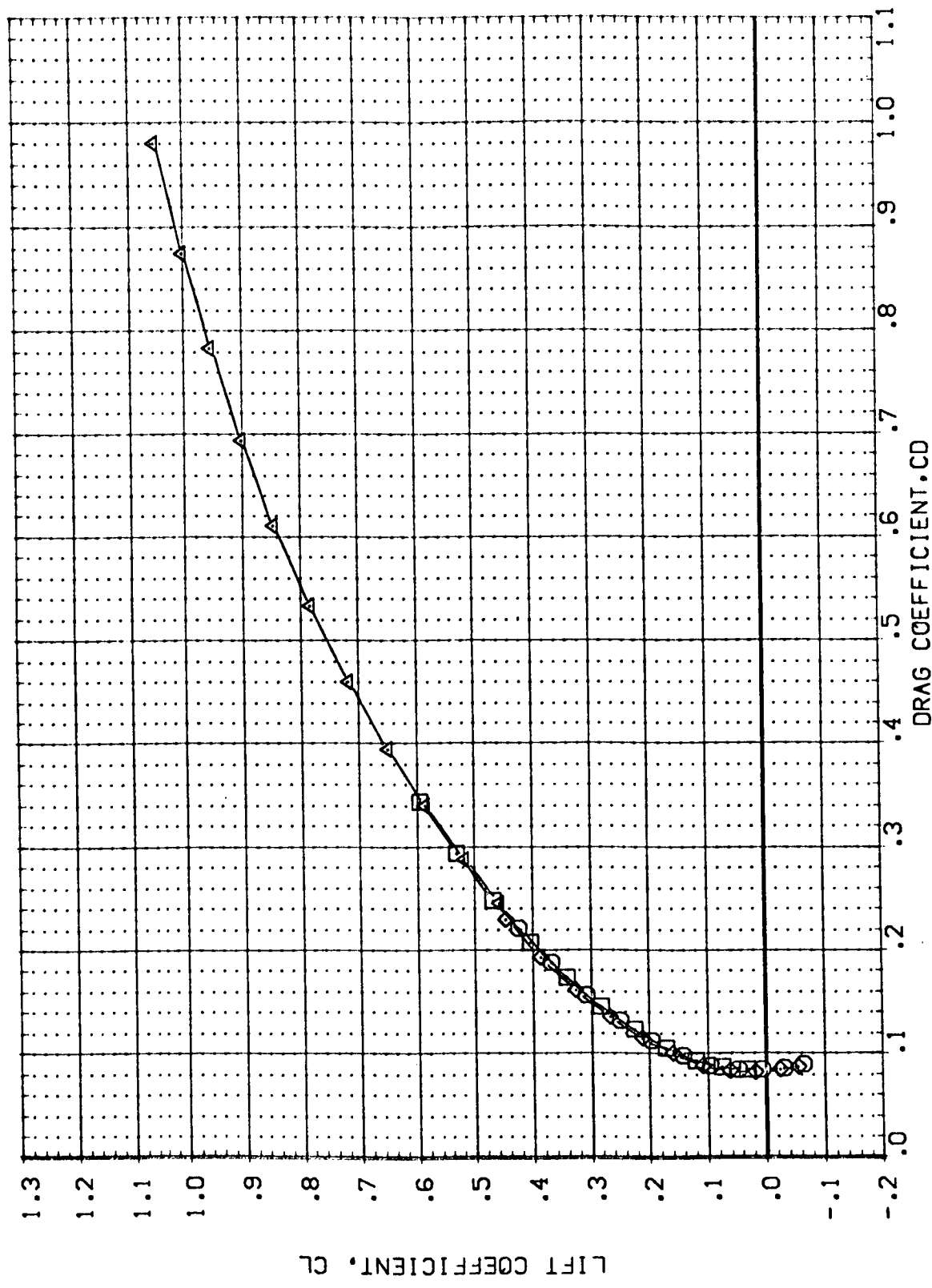


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET
(B)MACH = 4.96



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL	PARAMETRIC VALUES			REFERENCE INFORMATION	
	MACH	BETA	ELEVTR	SREF	SG.FT.
○	.595	.000	.000	LREF	474.8000
□	.899	.000	BOFLAP	BREF	936.7000
◇	1.199	999.990		XMRP	838.7000
△	1.950			YMRP	.0000
▽	2.990			ZMRP	.0000
◇	4.959			SCALE	.0040

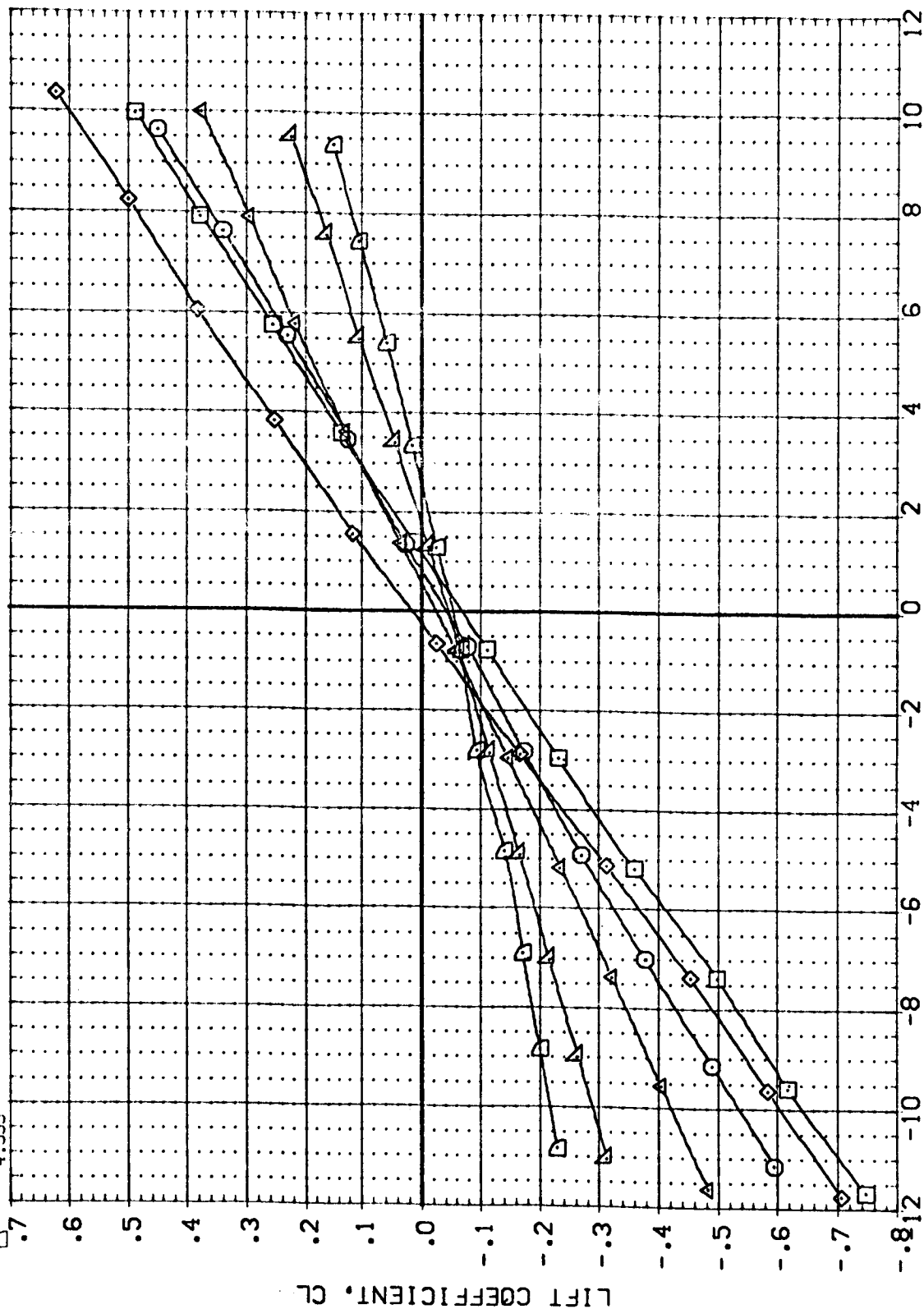


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(F87097)

MSFC 574(0A48) ORB 139B

SYMBOL	PARAMETRIC VALUES			REFERENCE INFORMATION	
	MACH	BETA	ELEVTR	SREF	SG.FT.
○	.595	.000	.000	2690.0000	IN.
□	.899	.000	.000	474.8000	IN.
◇	1.199	.000	.000	936.7000	IN.
△	1.950	.999.990		838.7000	IN.
▽	2.990			.0000	IN.
◇	4.959			.0000	IN.
				ZMRP	SCALE

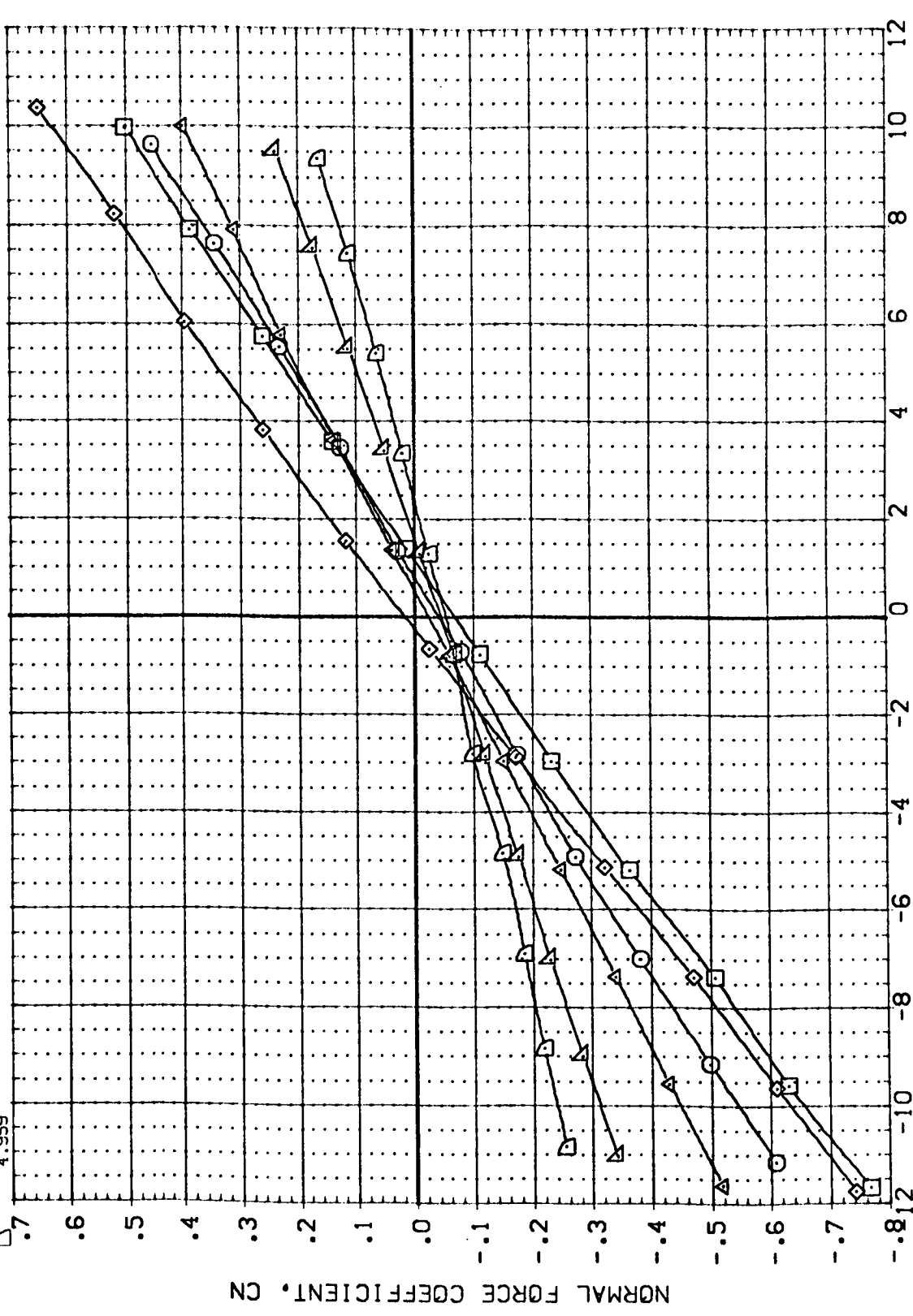


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XWRP 838.7000 IN.
 YWRP .0000 IN.
 ZWRP .0000 IN.
 SCALE .0040

(F87097)

MSFC 574(0A48) ORB 139B

MACH PARAMETRIC VALUES
 .595 BETA .000 ELEVTR .000
 .899 AILRON .000 BDFLAP .000
 1.199 SPD3RK 999.990
 1.950
 2.990
 4.959

SYMBOL

○
 □
 ◇
 △
 ▽
 ▢

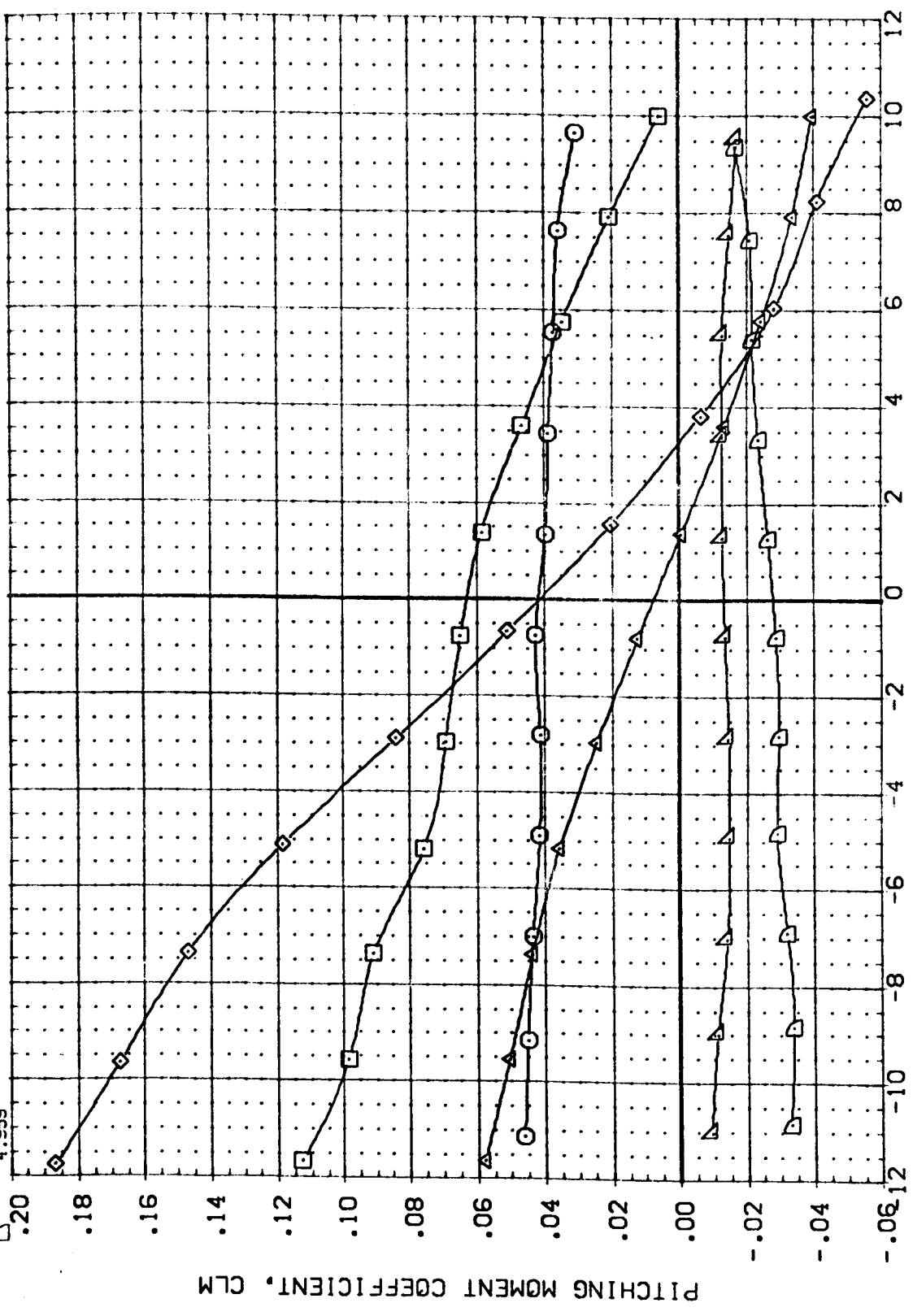


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(F87097)

MSFC 574(0A48) ORB 139B

SYMBOL
MACH
.595
.859
1.199
1.950
2.990
4.959

PARAMETRIC VALUES
BETA
.000
ATLRN
.000
SPOBRK
999.990

REFERENCE INFORMATION
SREF 2690.0000
LREF 474.8000
BREF 936.7000
XMRP 836.7000
YMRP .0000
ZMRP .0000
SCALE .0040

SC.FT.
IN.
IN.
IN.
IN.
IN.

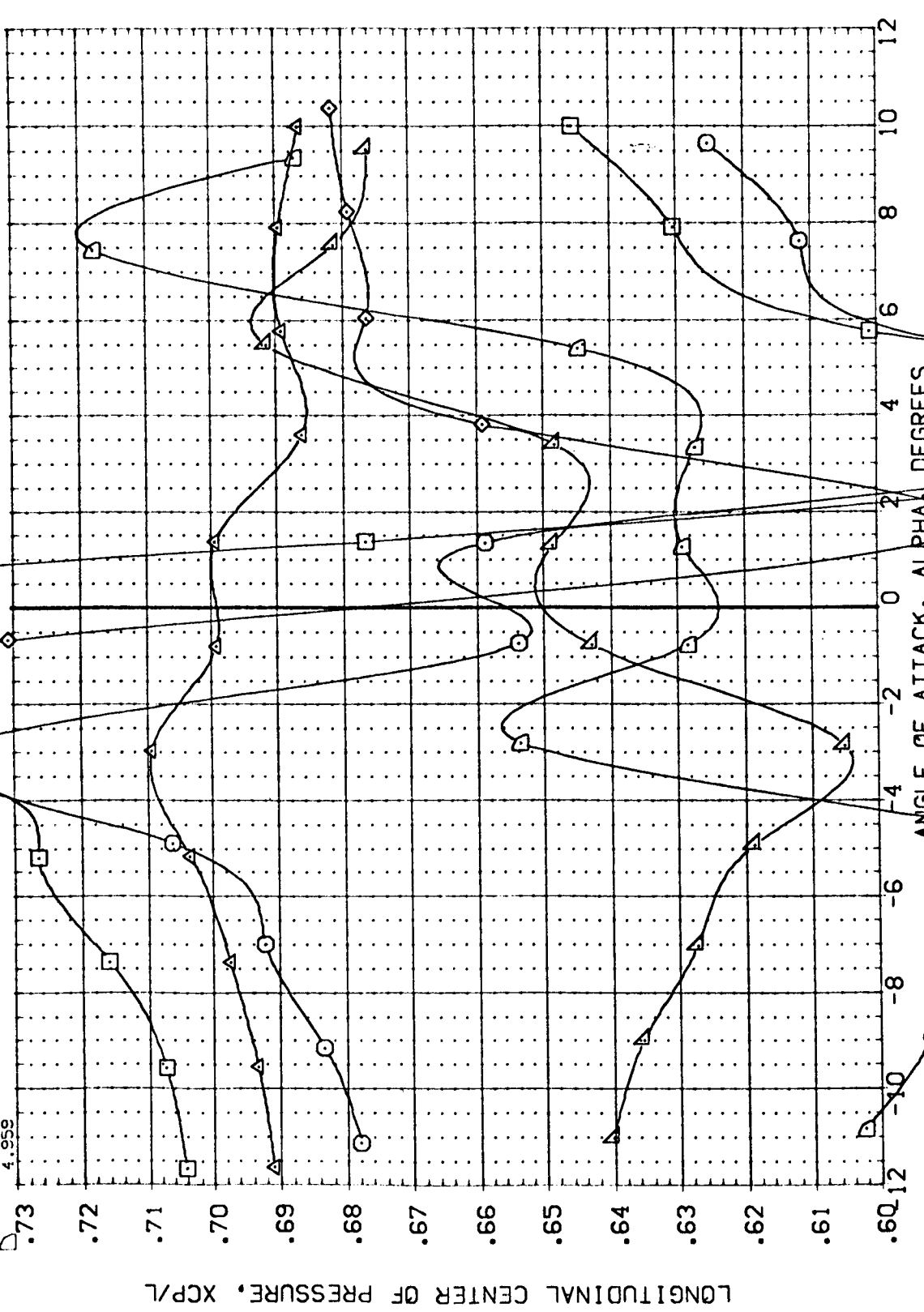


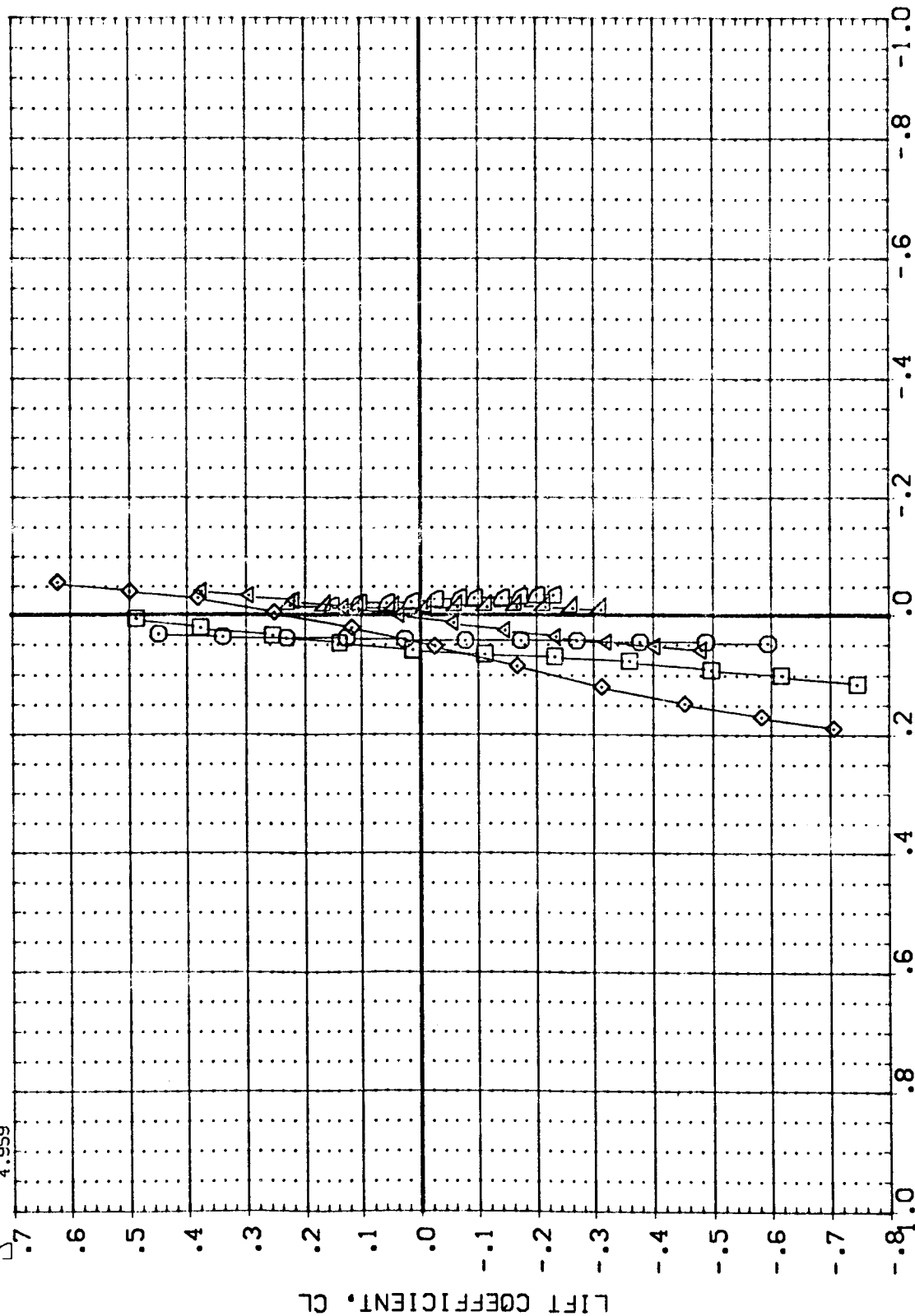
FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL		MACH		BETA		PARAMETRIC VALUES		REFERENCE INFORMATION	
○		.595		.000		ELEVTR	.000	SREF	2690.0000
□		.899		.000		BOFLAP	.000	LREF	474.8000
◇		1.199		SPDBRK	999.990			BREF	936.7000
△		1.950						XMRP	838.7000
▽		2.990						YMRP	.0000
◇		4.959						ZMRP	.0000
◇								SCALE	.0040



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FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

SYMBOL		MACH		BETA		PARAMETRIC VALUES		REFERENCE INFORMATION	
○		.595		.000		ELEVTR	.000	SREF	2690.0000
□		.899		.000		BOFLAP	.000	LREF	474.8000
◇		1.199		SP08RK	999.990			BREF	936.7000
△		1.950						XMRP	838.7000
▽		2.990						YMRP	.0000
◇		4.959						ZMRP	.0000
								SCALE	.0040

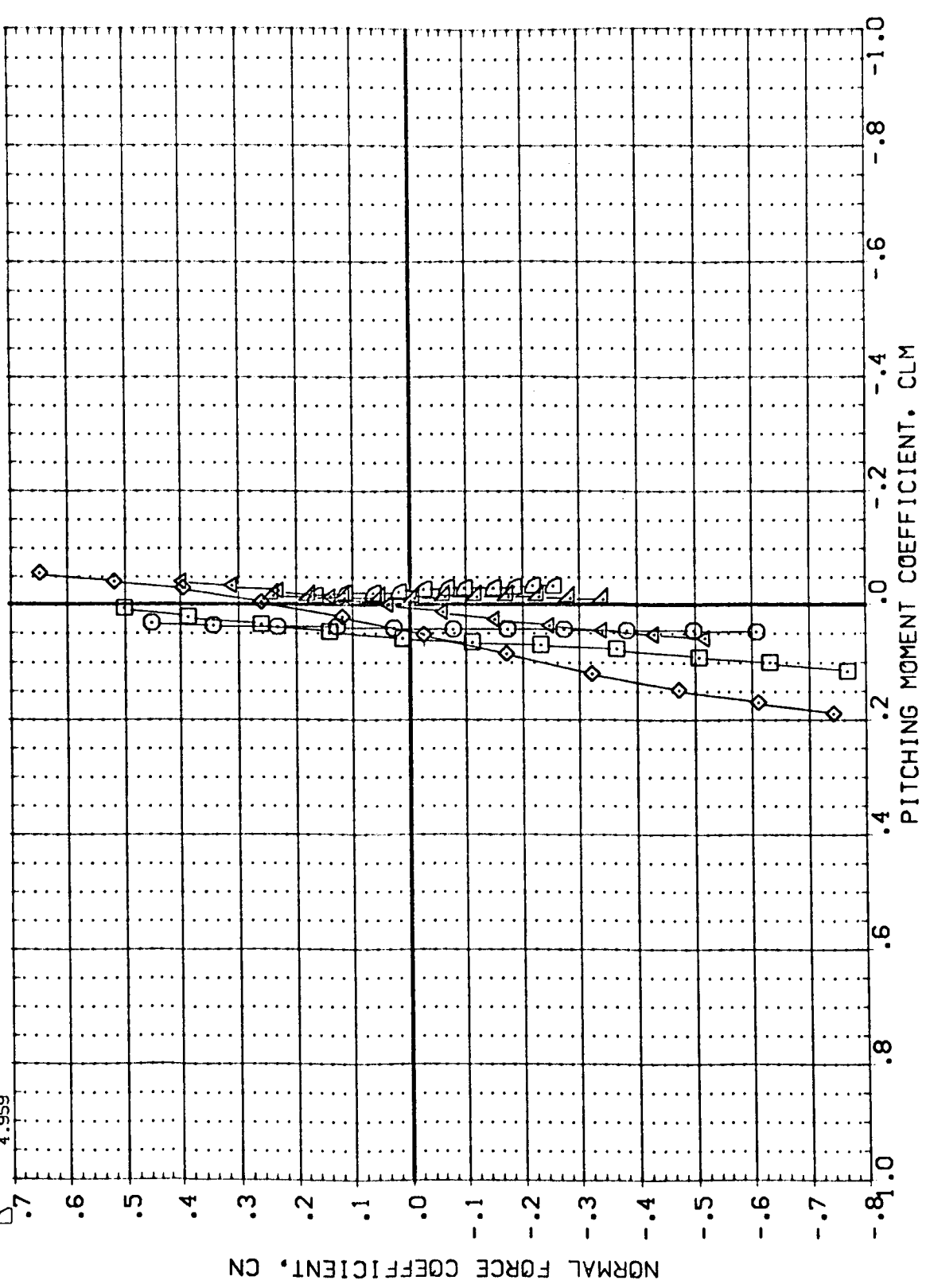


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL	PARAMETRIC VALUES				REFERENCE INFORMATION	
	MACH	BETA	ELEVTR		SREF	SG.FT.
○	.595	.000	.000		2690.0000	IN.
□	.899	.000	.000		474.8000	IN.
◇	1.199	.000	.000		936.7000	IN.
△	1.950	.000	.000		838.7000	IN.
▽	2.990	.000	.000		.0000	IN.
◇	4.959	.000	.000		.0000	IN.
					SCALE	.0040

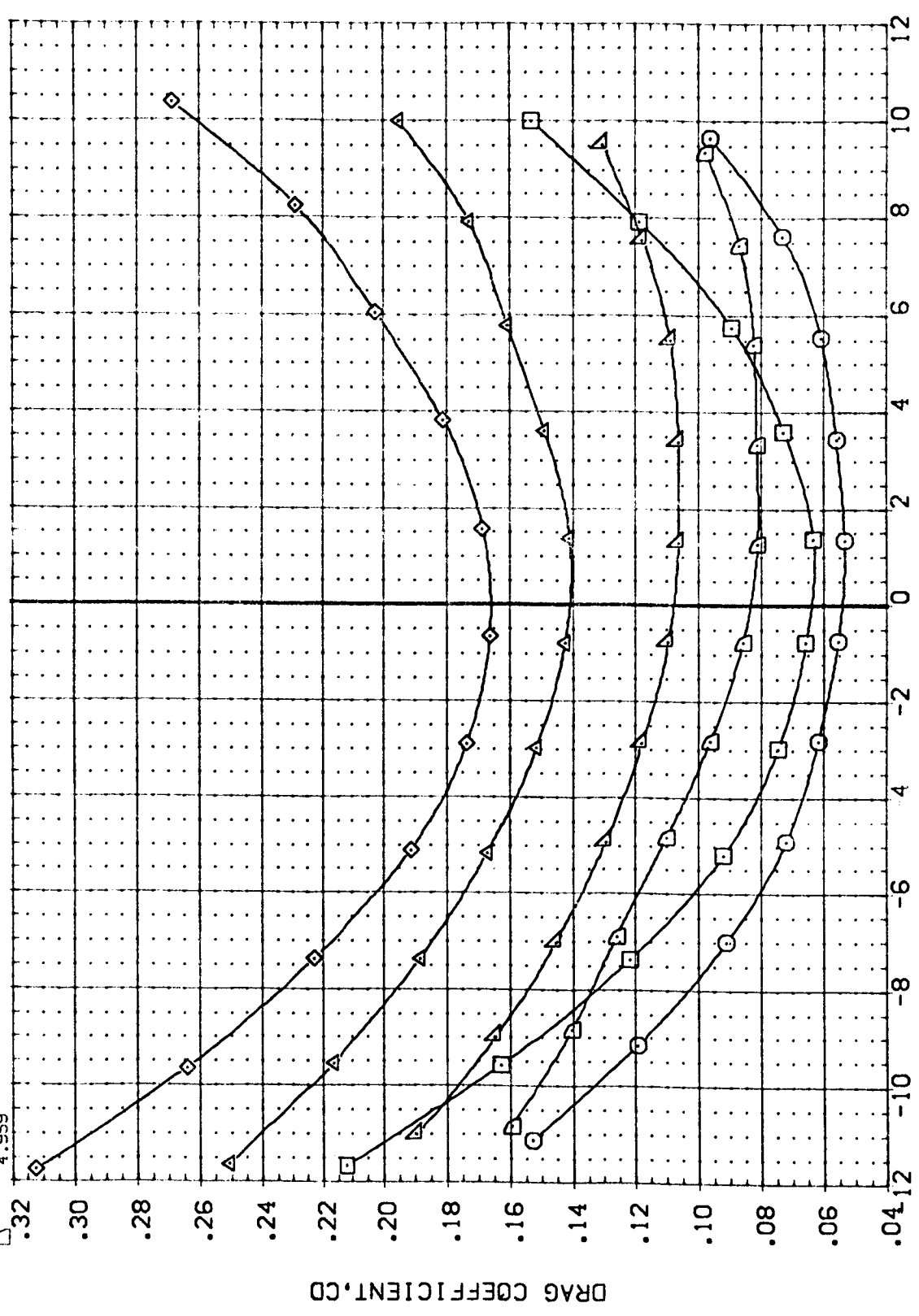


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XMRP 838.7000 IN.
VMRP .0000
ZMRP .0000
SCALE .0040

PARAMETRIC VALUES
MACH .595 BETA .000 ELEVTR .000
.899 ALLRCN .000 BOFLAP .000
1.199 SPDGRK 999.990
1.950
2.990
4.999

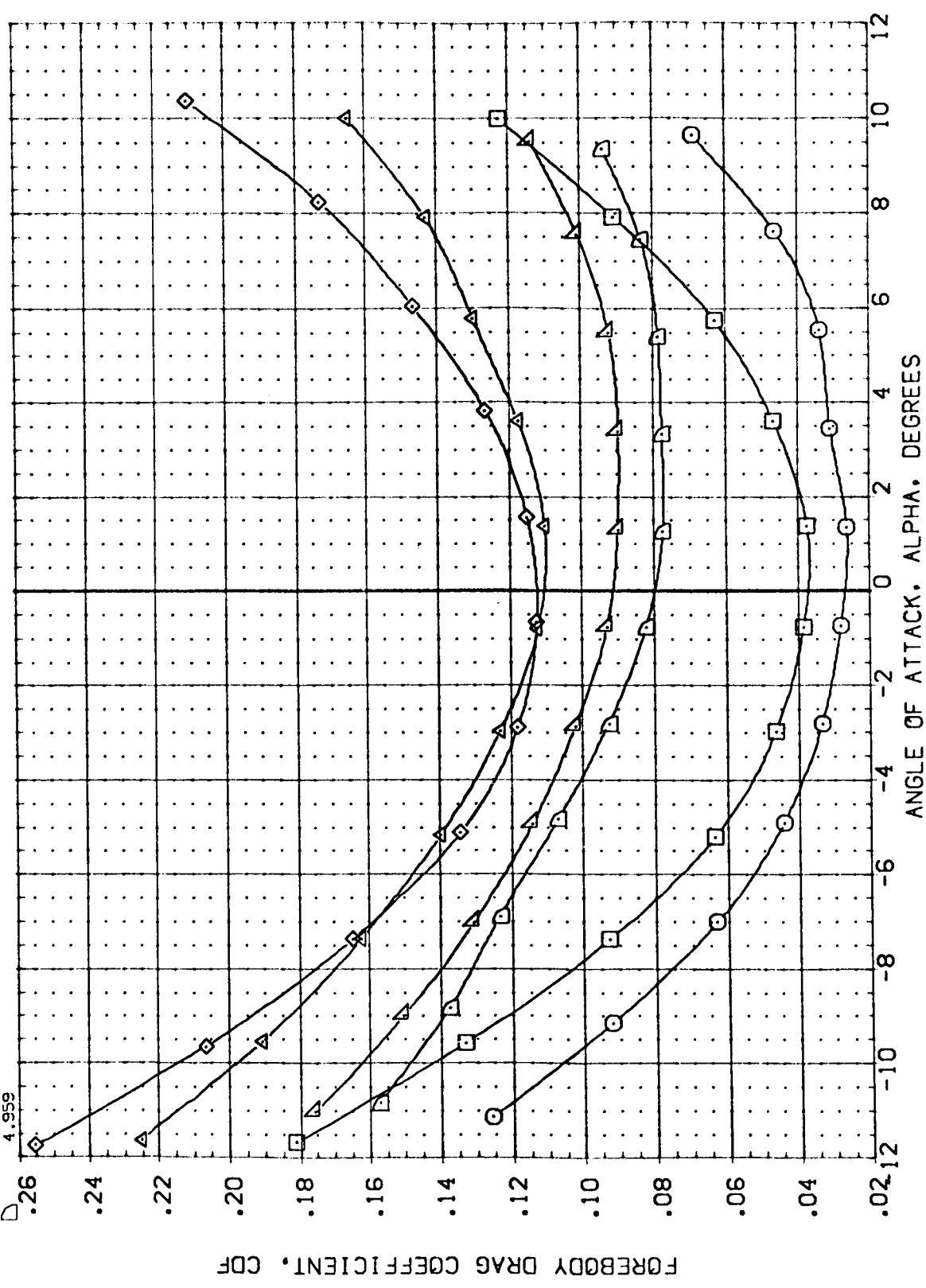


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL MACH PARAMETRIC VALUES REFERENCE INFORMATION
SC.FT.
SREF 2690.0000
LREF 474.8000
BREF 936.7000
XMRP 838.7000
YMRP .0000
ZMRP .0000
SCALE .0040

BETA .000
ELEVIR .000
AILRON .000
BOFLAP .000
SPOBRK 999.990

1.595
.899
1.199
1.950
2.990
4.959

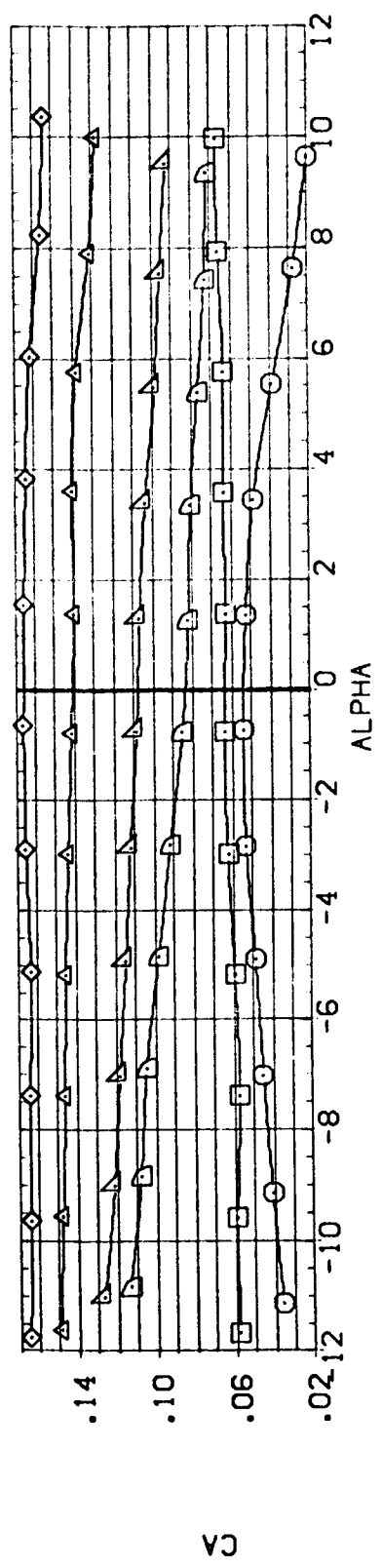
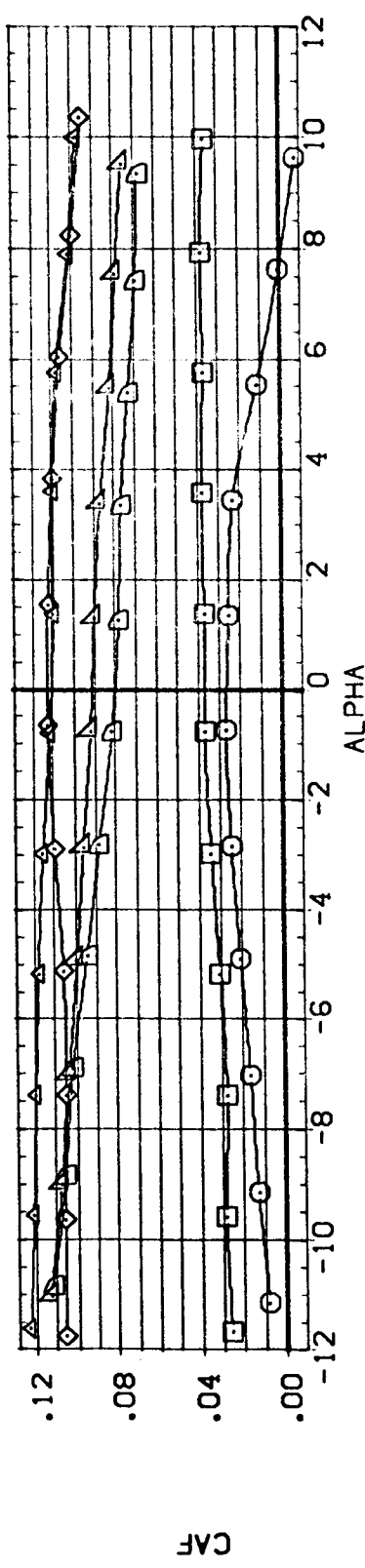
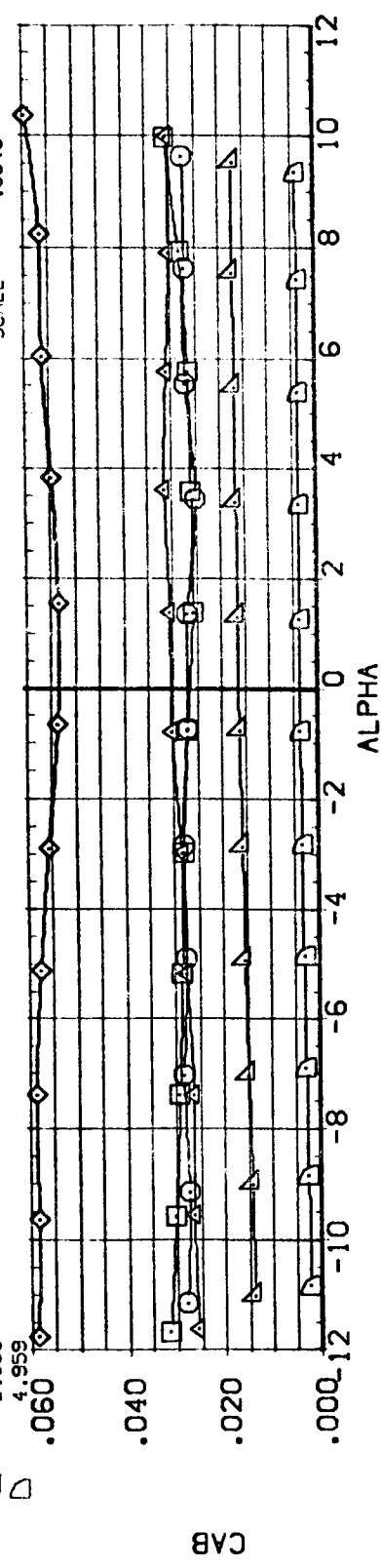


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

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(F87097)

MSFC 574(0A48) ORB 139B

SYMBOL		MACH	PARAMETRIC VALUES		REFERENCE INFORMATION				
○	○	.595	BETA	.000	ELEVTR	.000	SREF	2690.0000	SO.FT.
		.899	AIRCON	.000	BDFLAP	.000	LREF	474.8000	IN.
◇	◇	1.199	SPDRK	999.990			BREF	936.7000	IN.
		XMRP					838.7000	IN.	
△	△	1.950					YMRP	.0000	IN.
		2.990					ZMRP	.0000	IN.
							SCALE	.0040	

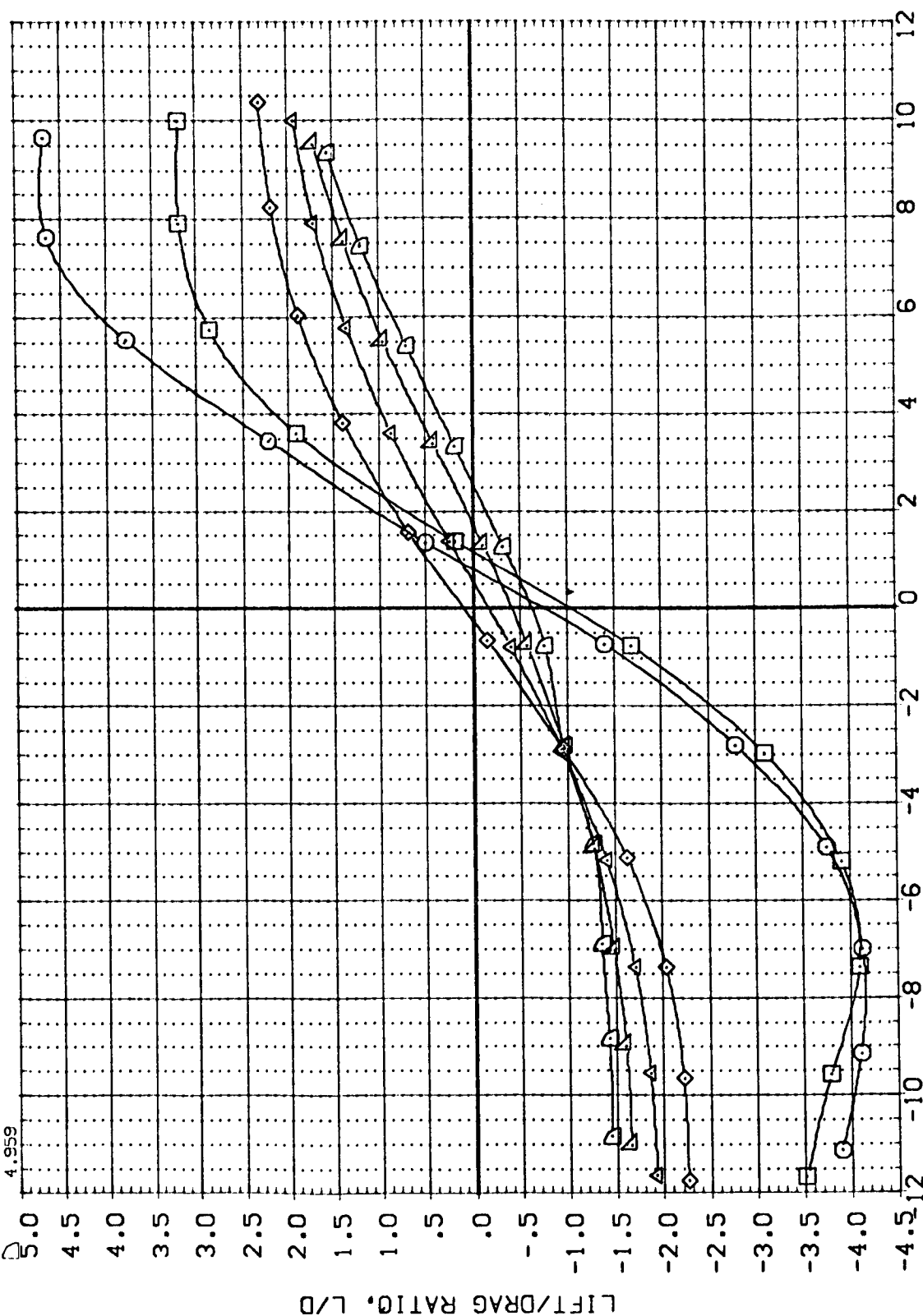


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(OA48) ORB 139B

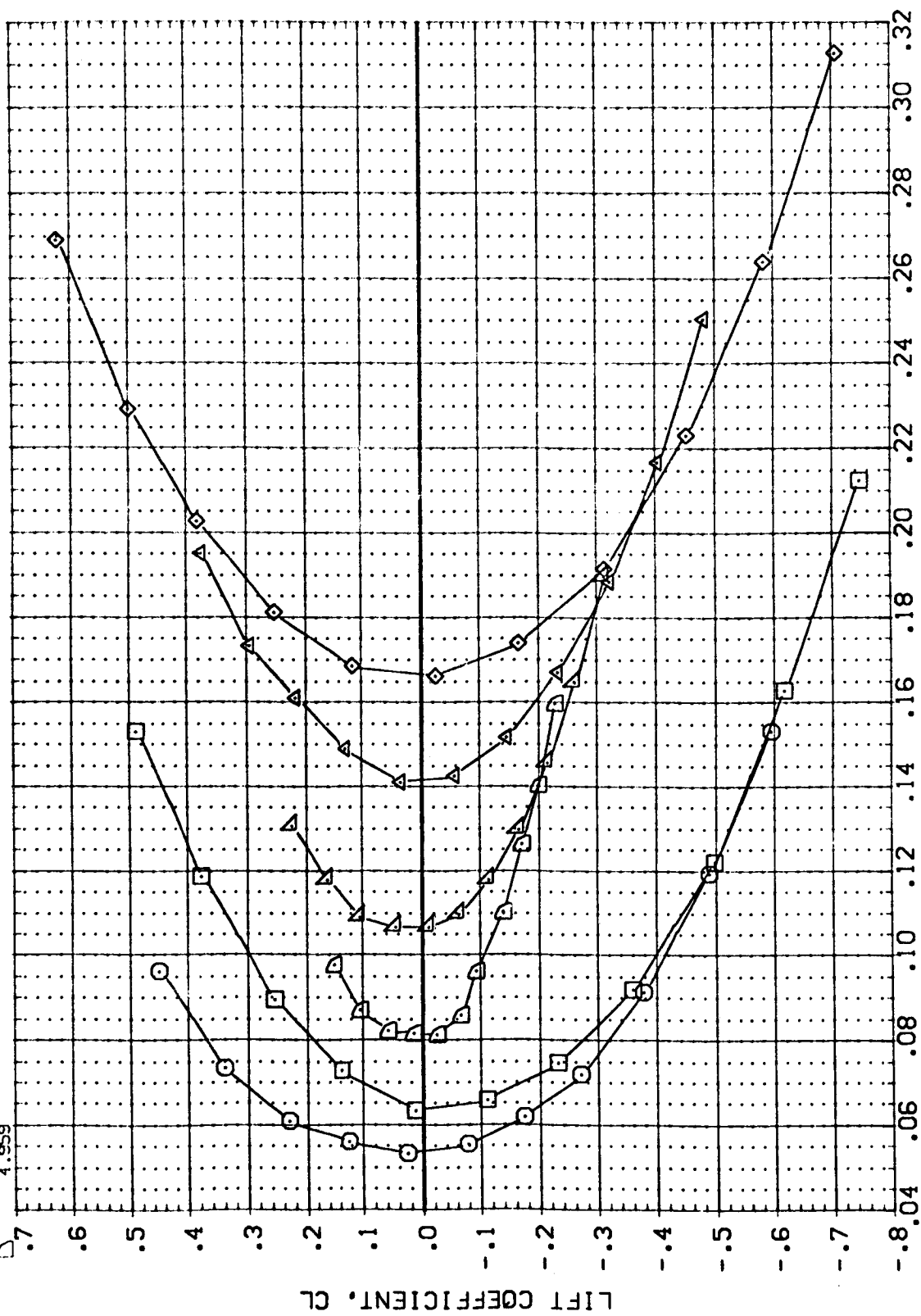
(F87097)

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XREF 838.7000 IN.
YREF 0.0000 IN.
ZREF 0.0000 IN.
SCALE .0040

PARAMETRIC VALUES
BETA .000 ELEVTR .000
AILRON .000 BCF LAP .000
SPDRK 999.990

MACH
.595
.899
1.199
1.950
2.990
4.959

SYMBOL
□
○
◇
△
▽
◇



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FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(687097)

MSFC 574(0A48) ORB 139B

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XREF 864.5000 IN.
YREF .0000 IN.
ZREF .0000 IN.
SCALE .0040

PARAMETRIC VALUES
MACH .595 BETA .000 ELEVTR .000
.899 AILRON .000 BOFLAP .000
1.199 SPOBRK 999.990
1.950
2.990
4.959

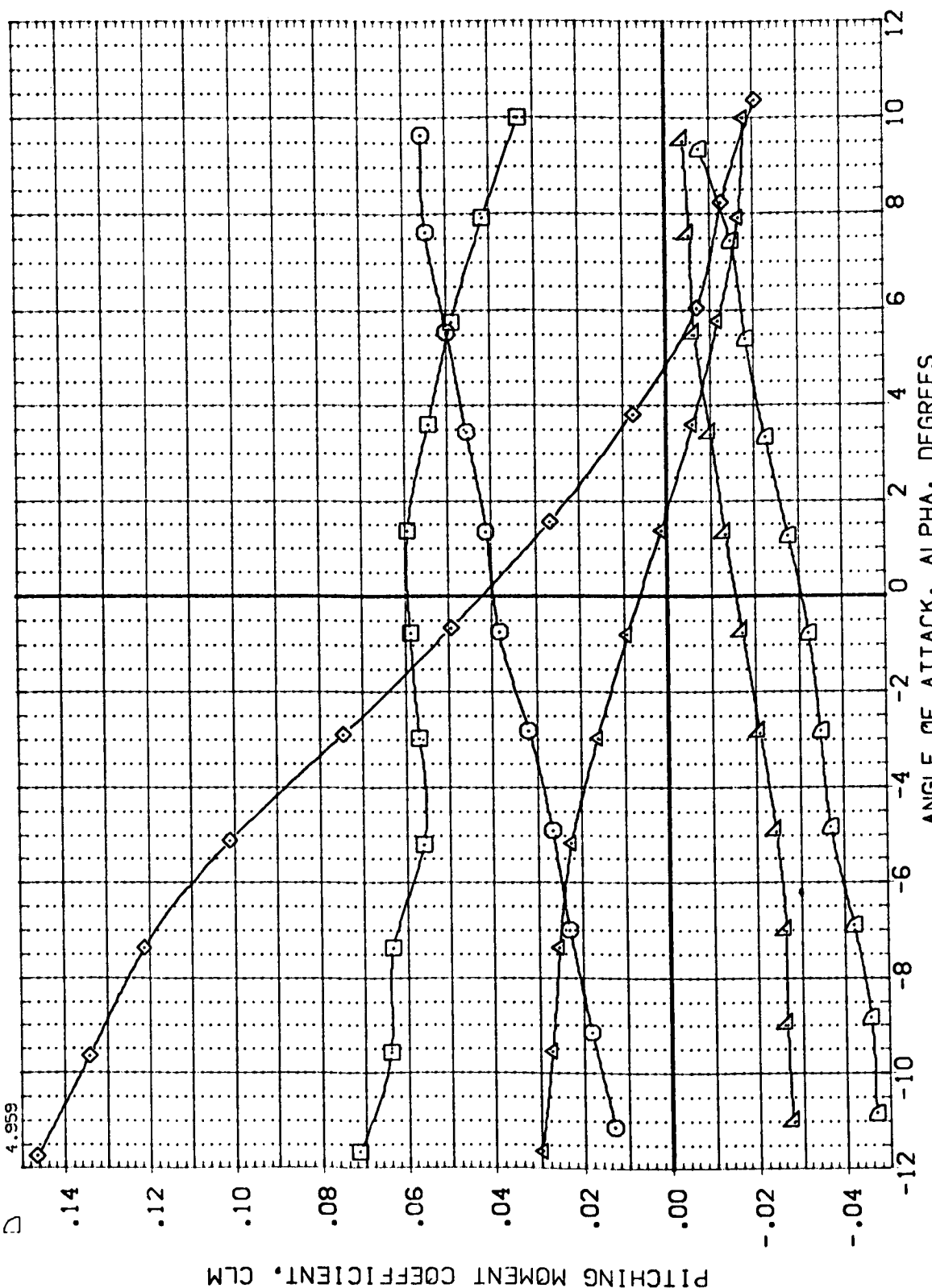


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONG. CHARACTERISTICS(CAFT C.G.)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(CA48) ORB 1398
 (A87011) MSFC 574(CA48) ORB 1398
 (A87012) MSFC 574(CA48) ORB 1398
 (A87013) MSFC 574(CA48) ORB 1398
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000
 ELEVTR .000
 .000
 .000
 .000
 .000
 SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 BDFLAP .000
 .000
 .000
 .000
 .000
 REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 YMRP 838.7000
 ZMRP .0000
 SCALE .0040

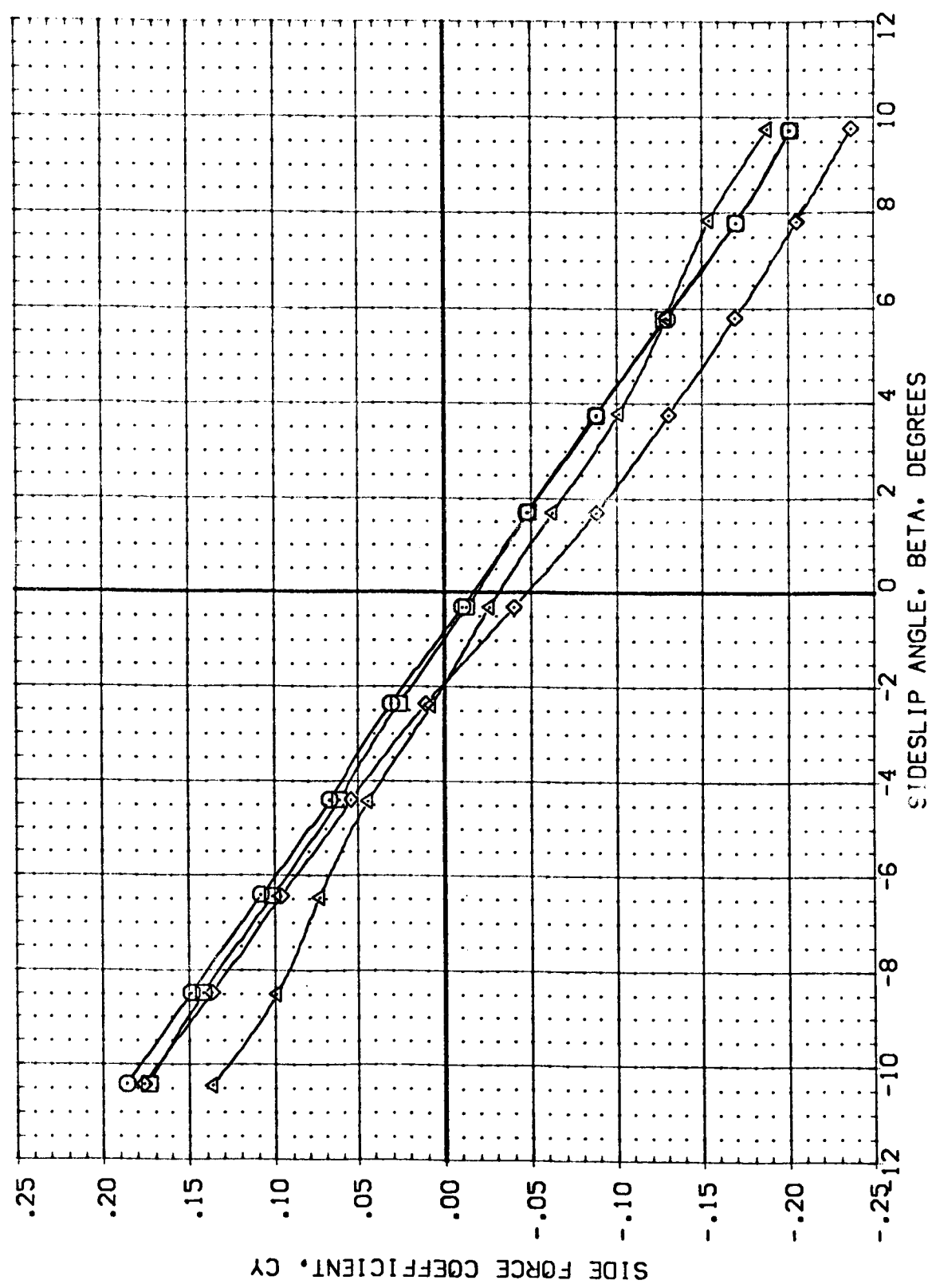


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(A87011)	MSFC 574(CA48) CRB 139B	10.000	.000	999.990	.000	LREF 474.8000
(A87012)	MSFC 574(CA48) CRB 139B	20.000	.000	999.990	.000	BREF 936.7000
(A87013)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87014)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

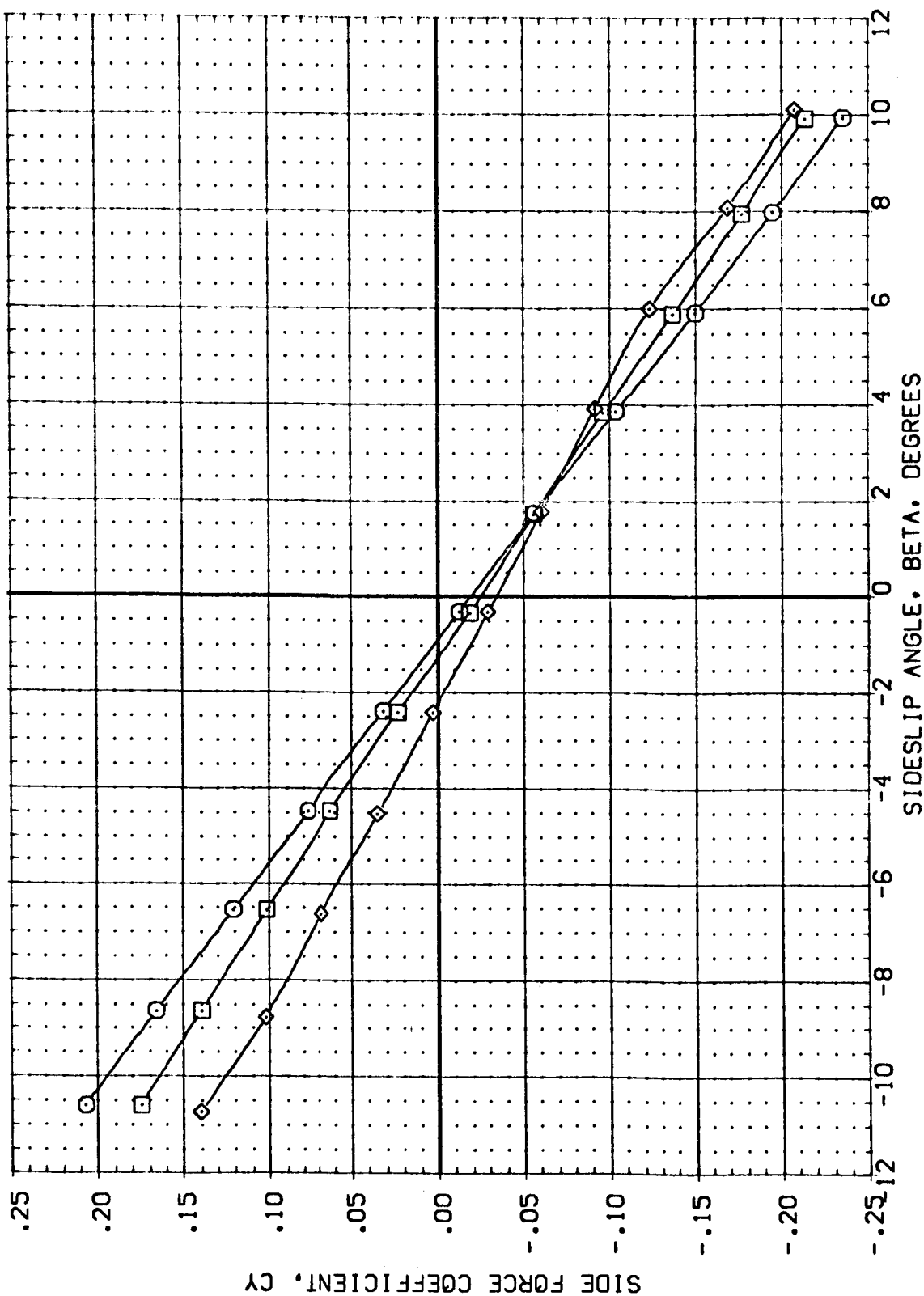


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) ORB 139B
 (A87011) MSFC 574(OA48) ORB 139B
 (A87012) MSFC 574(OA48) ORB 139B
 (A87013) DATA NOT AVAILABLE
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 536.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

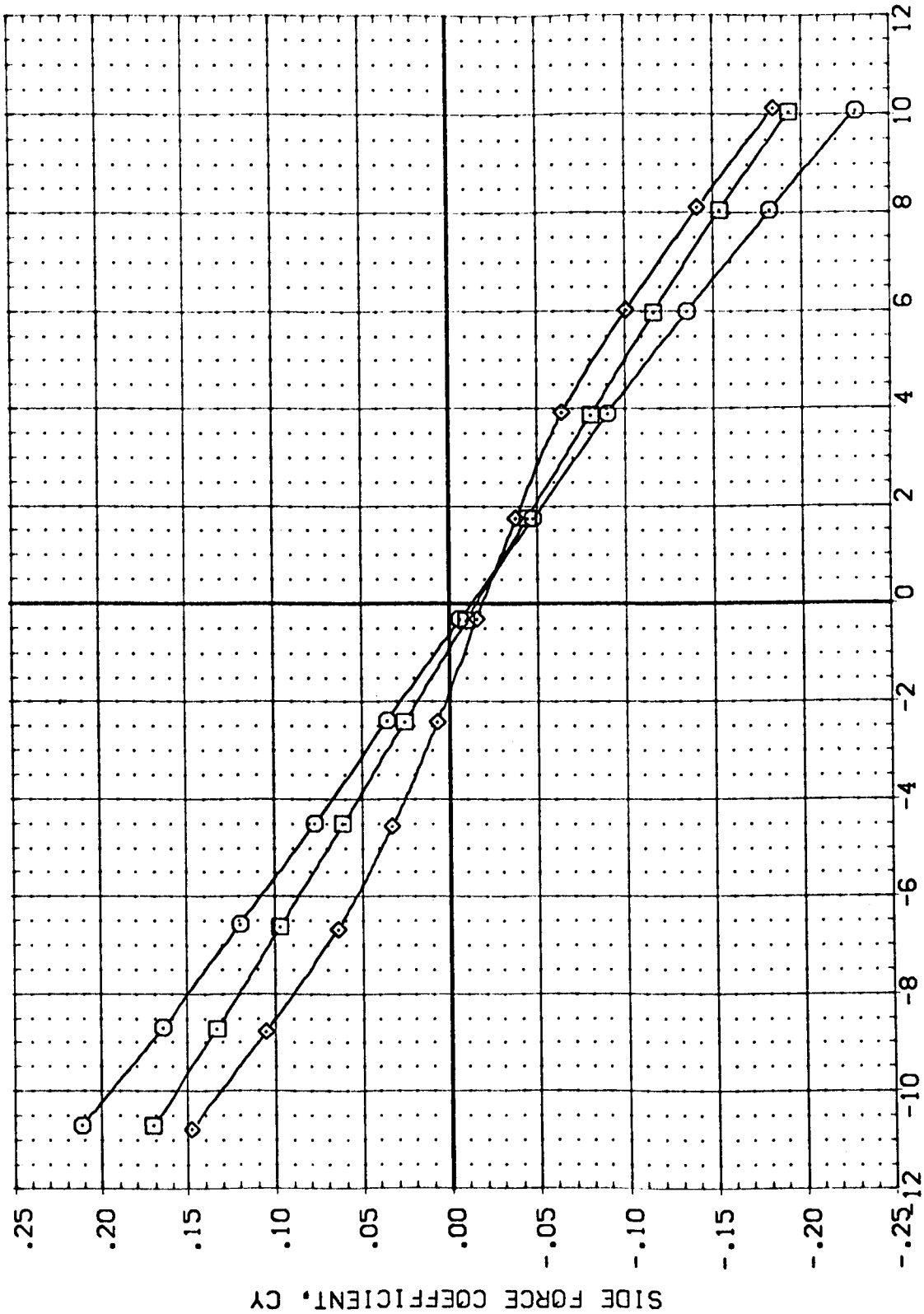
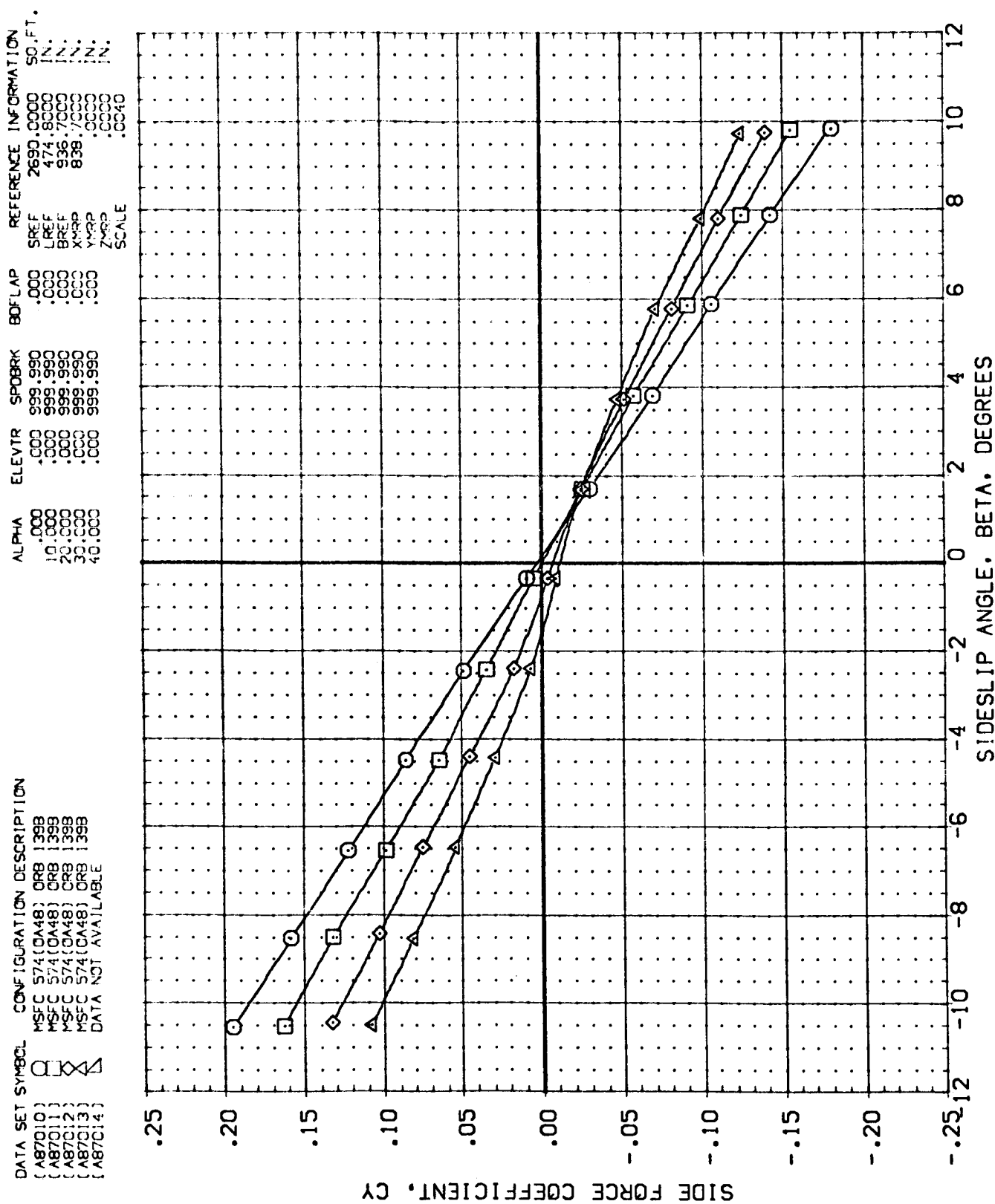


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(O)MACH = 1.95



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) CRB 139B
 (A87011) MSFC 574(OA48) CRB 139B
 (A87012) MSFC 574(OA48) CRB 139B
 (A87013) MSFC 574(OA48) CRB 139B
 (A87014) MSFC 574(OA48) CRB 139B

ALPHA .000
 10.000
 20.000
 30.000
 40.000
 ELEVTR .000
 .000
 .000
 .000
 .000
 SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 BOFLAP .000
 .000
 .000
 .000
 .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

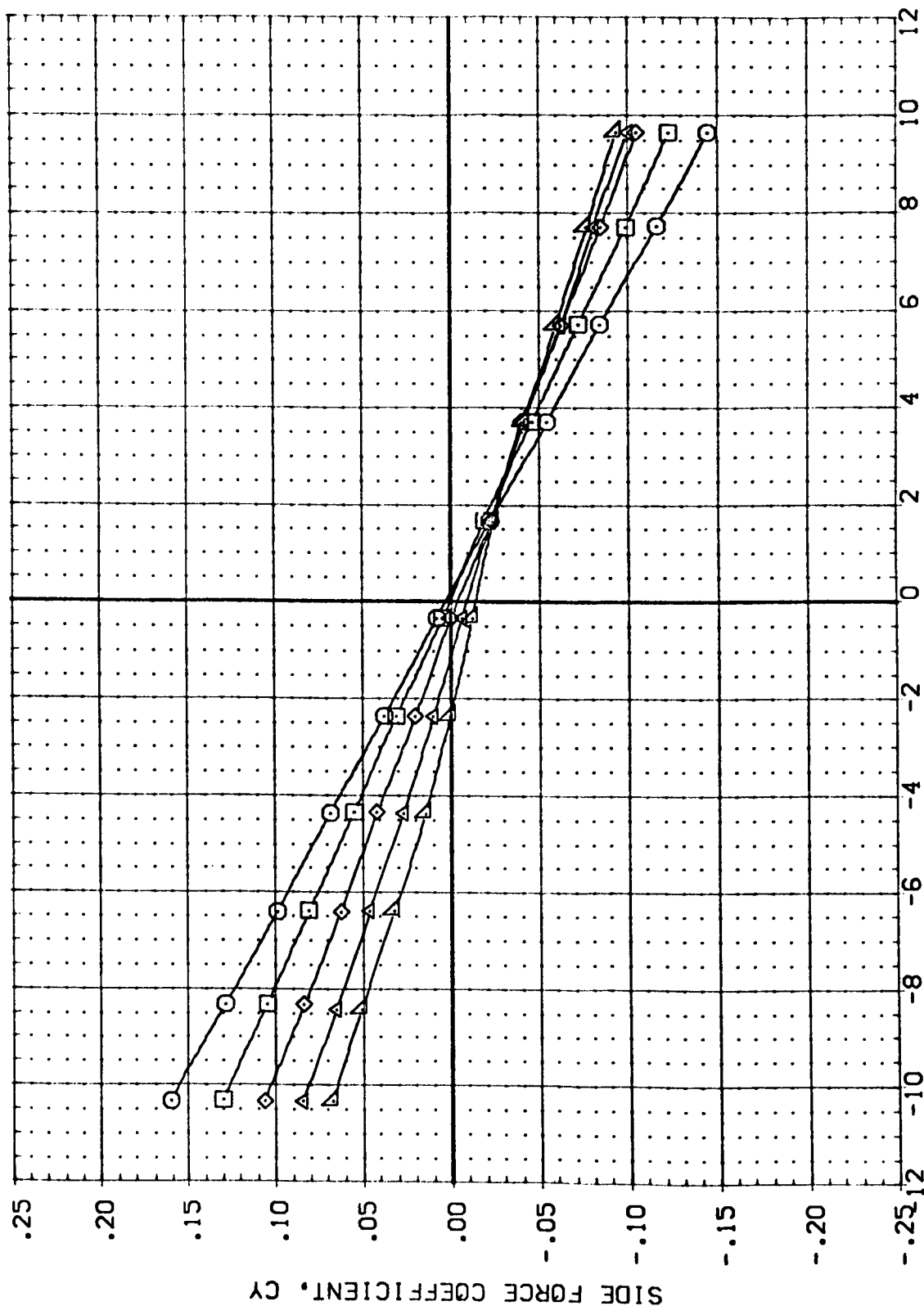


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) CRB 1398
 (A87011) MSFC 574(OA48) CRB 1398
 (A87012) MSFC 574(OA48) CRB 1398
 (A87013) MSFC 574(OA48) CRB 1398
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000
 ELEVTR .000
 .000
 .000
 .000
 .000
 SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 BOFLAP .000
 .000
 .000
 .000
 .000
 REFERENCE INFORMATION
 SREF 2690.0000 50. FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000
 ZMRP .0000
 SCALE .0040

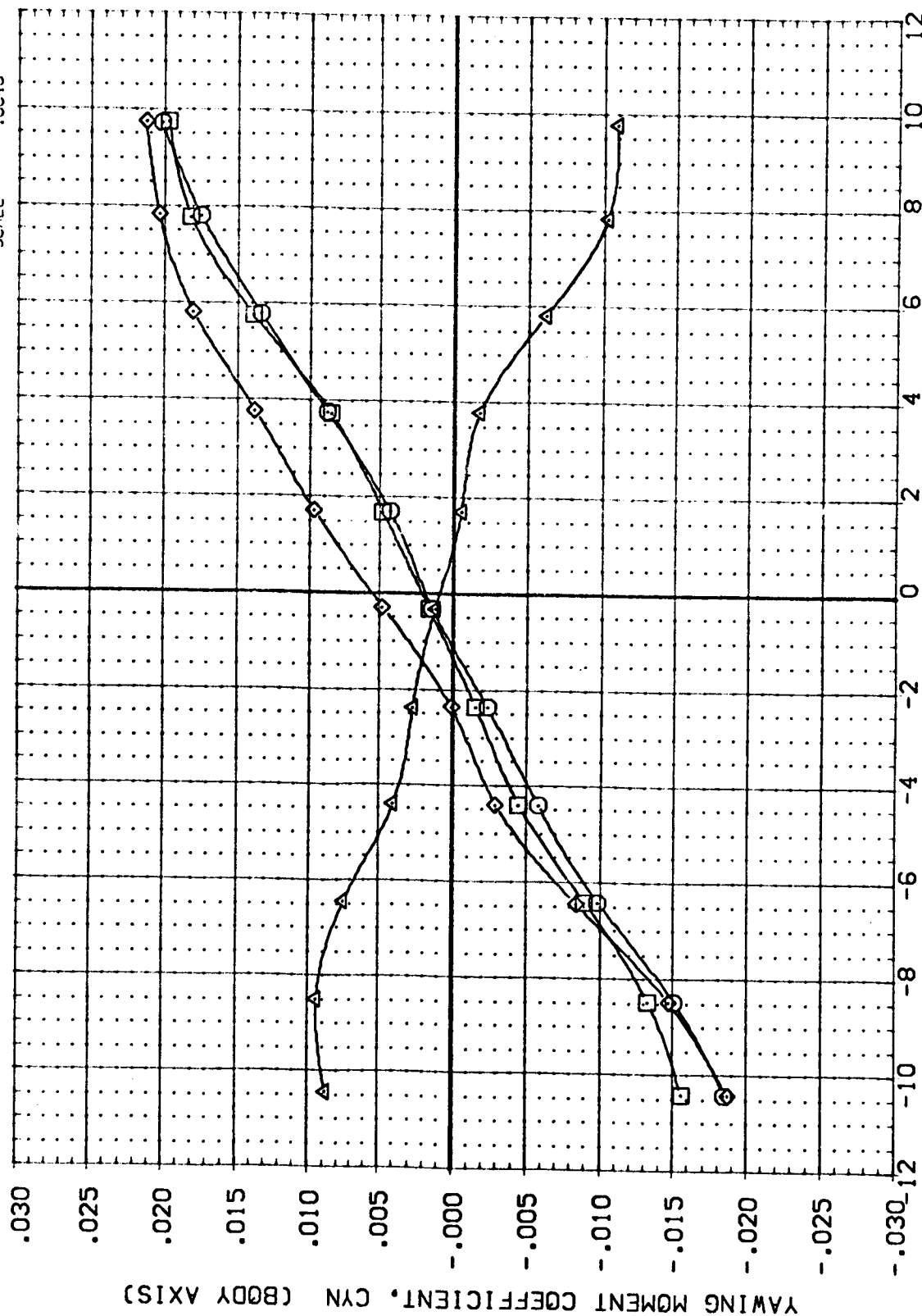


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87010) MSFC 574(OA48) ORB 139B
 (A87011) MSFC 574(OA48) ORB 139B
 (A87012) MSFC 574(OA48) ORB 139B
 (A87013) DATA NOT AVAILABLE
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPDRBK 999.990
 999.990
 999.990
 999.990
 999.990

BOELAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000
 ZMRP .0000
 SCALE .0040

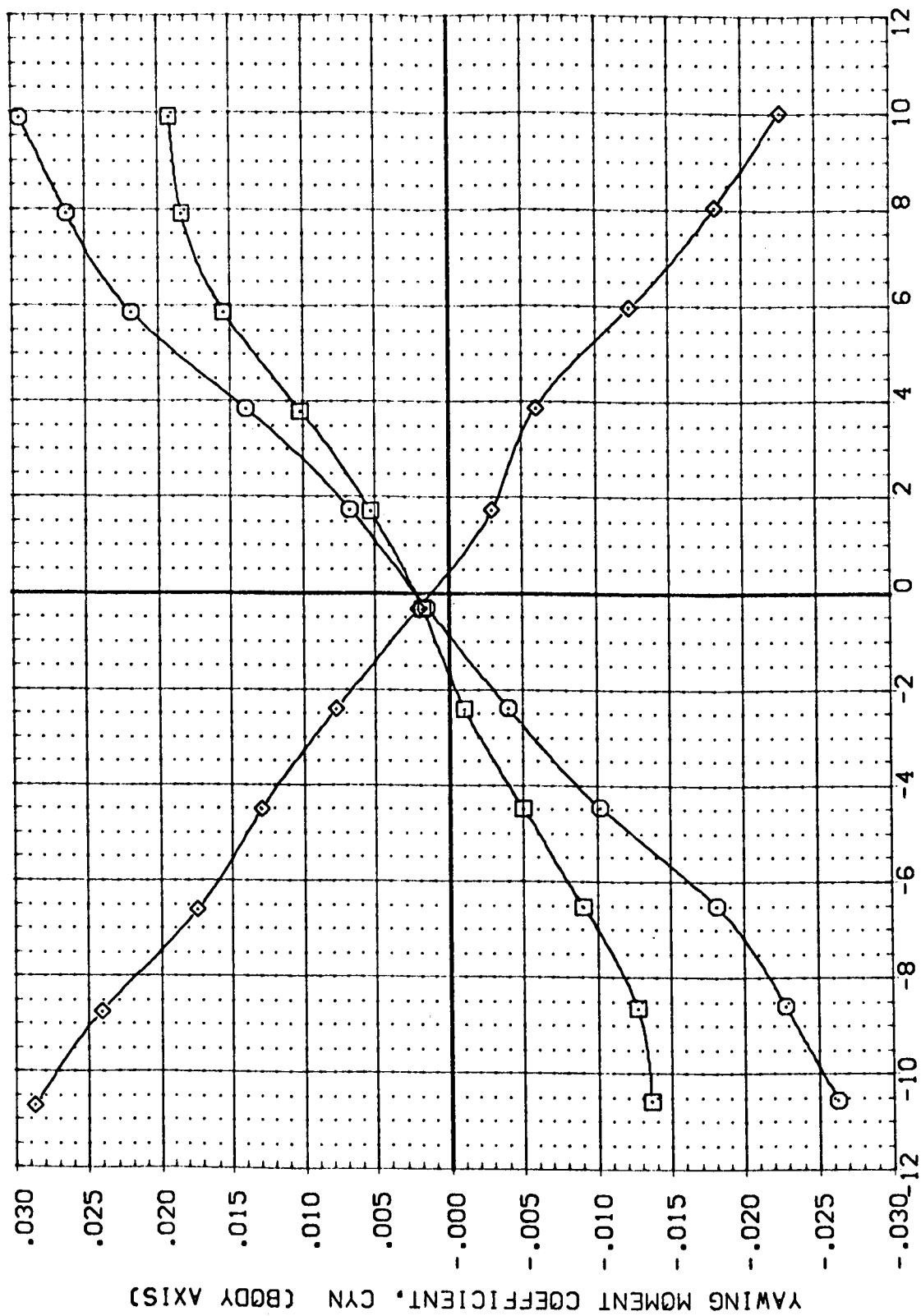


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(A87011)	MSFC 574(CA48) CRB 1393	10.000	.000	999.990	.000	LREF 474.8000
(A87012)	MSFC 574(CA48) CRB 1393	20.000	.000	999.990	.000	BREF 936.7000
(A87013)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87014)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	VMRP .0000
						ZMRP .0000
						SCALE .0040
						SC.FT. N.

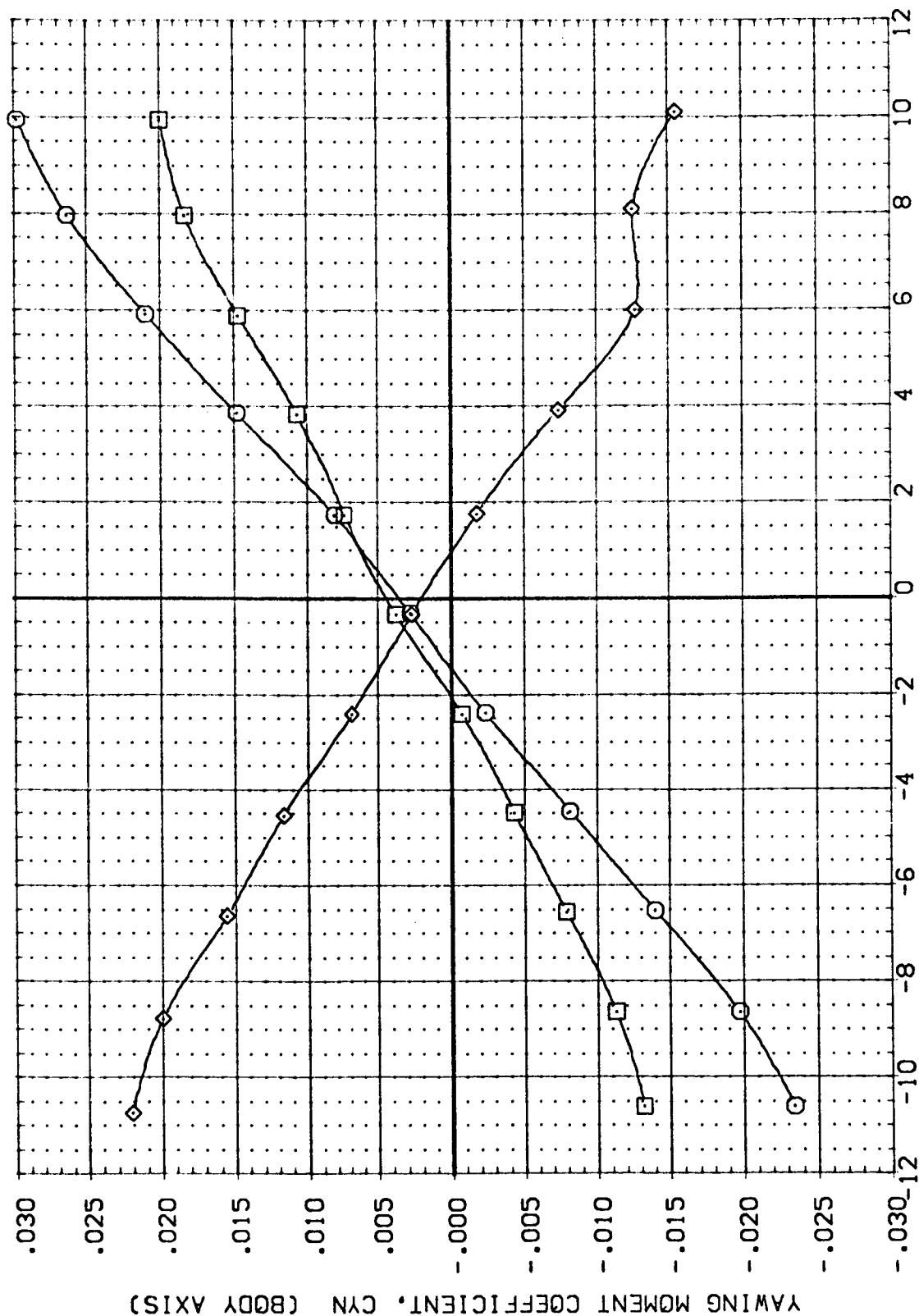


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87C10) MSFC 574(OA48) CRB 139B
 (A87C11) MSFC 574(OA48) CRB 139B
 (A87C12) MSFC 574(OA48) CRB 139B
 (A87C13) DATA NOT AVAILABLE
 (A87C14) DATA NOT AVAILABLE

ALPHA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 20.000 .000 999.990 .000 BREF 936.7000 IN.
 30.000 .000 999.990 .000 XMRP 838.7000 IN.
 40.000 .000 999.990 .000 ZMRP .0000
 SCALE .0040

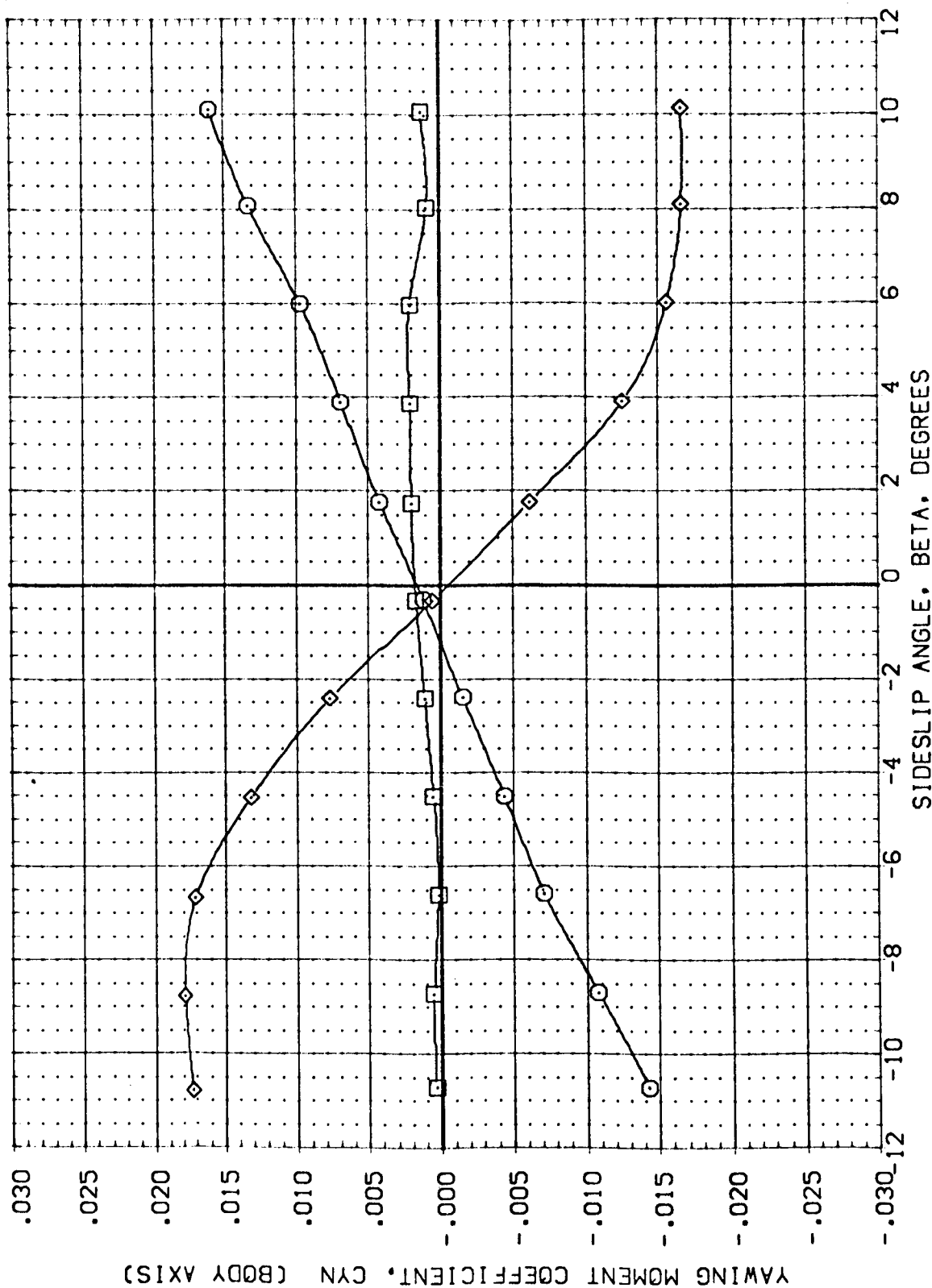


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

() MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(OA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87011)	MSFC 574(OA48) CRB 1399	10.000	.000	999.990	.000	LREF 4774.8000 IN.
(A87012)	MSFC 574(OA48) CRB 1399	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87013)	MSFC 574(OA48) CRB 1399	30.000	.000	999.990	.000	XREF 838.7000 IN.
(A87014)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

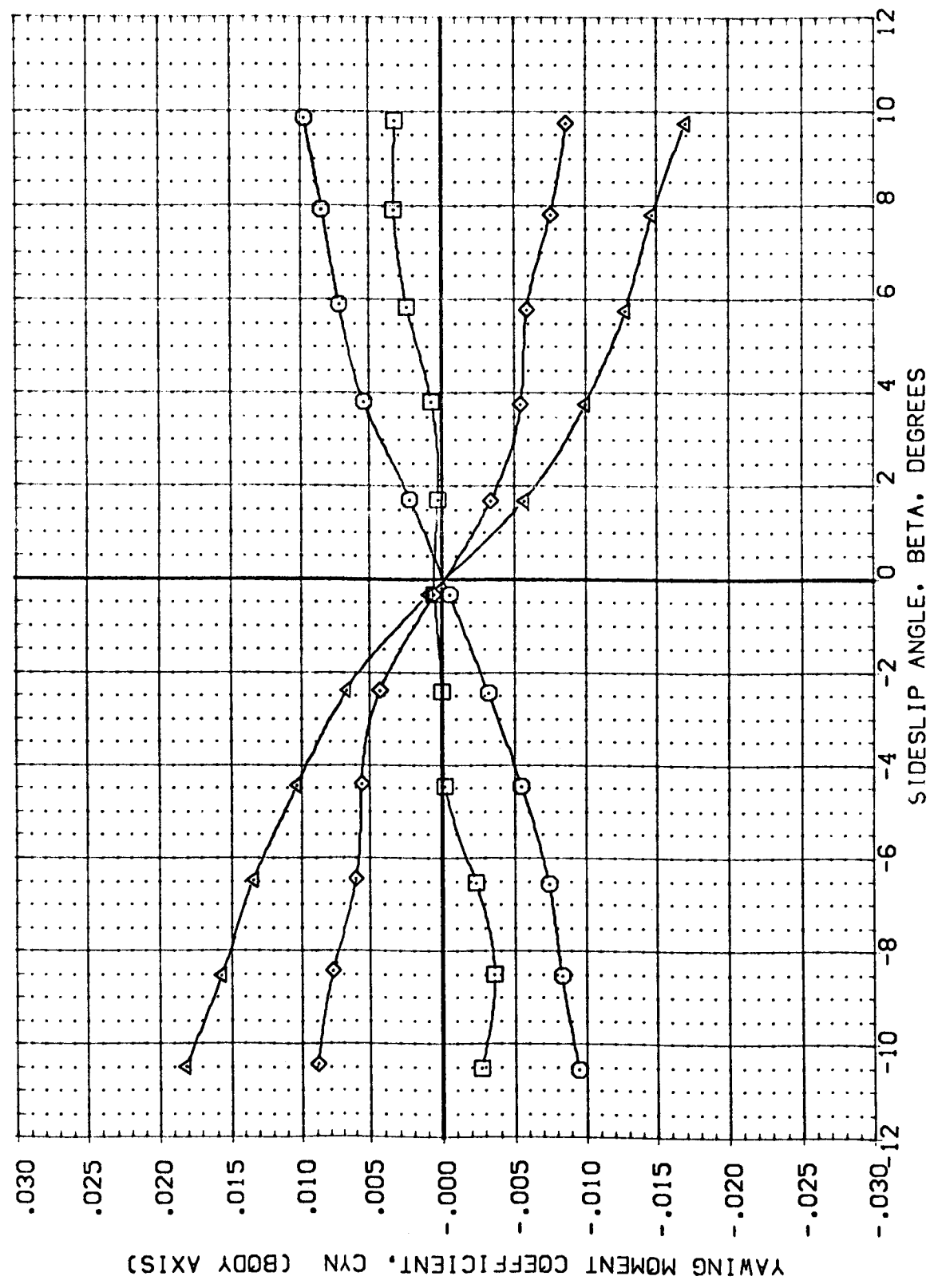


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(A87011)	MSFC 574(CA48) CRB 139B	10.000	.000	999.990	.000	LREF 474.8000
(A87012)	MSFC 574(CA48) CRB 139B	20.000	.000	999.990	.000	BRF 936.7000
(A87013)	MSFC 574(CA48) CRB 139B	30.000	.000	999.990	.000	XMRP 838.7000
(A87014)	MSFC 574(CA48) CRB 139B	40.000	.000	999.990	.000	VMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0040

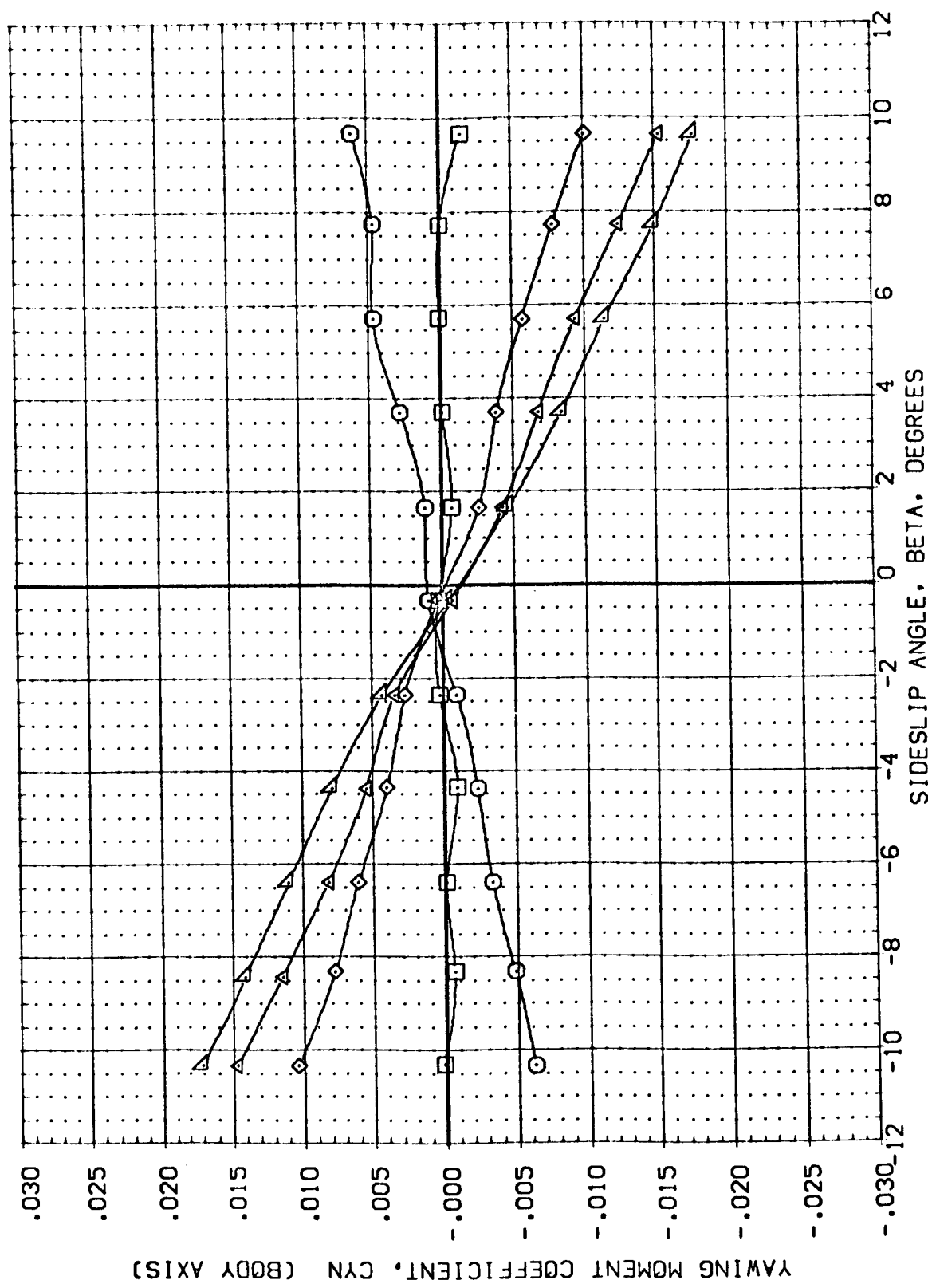


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87010) MSFC 574(CA48) CRB 139B

(A87011) MSFC 574(CA48) CRB 139B

(A87012) MSFC 574(CA48) CRB 139B

(A87013) MSFC 574(CA48) CRB 139B

(A87014) DATA NOT AVAILABLE

ALPHA .000
10.000
20.000
30.000
40.000

ELEVTR .000
.000
.000
.000
.000

SPOBRK 999.990
999.990
999.990
999.990
999.990

BOFLAP .000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF 2690.0000 SS.FT.

LREF 474.8000 N.

BREF 936.7000 N.

XMRP 838.7000 N.

YMRP .0000 N.

ZMRP .0000 N.

SCALE .0040

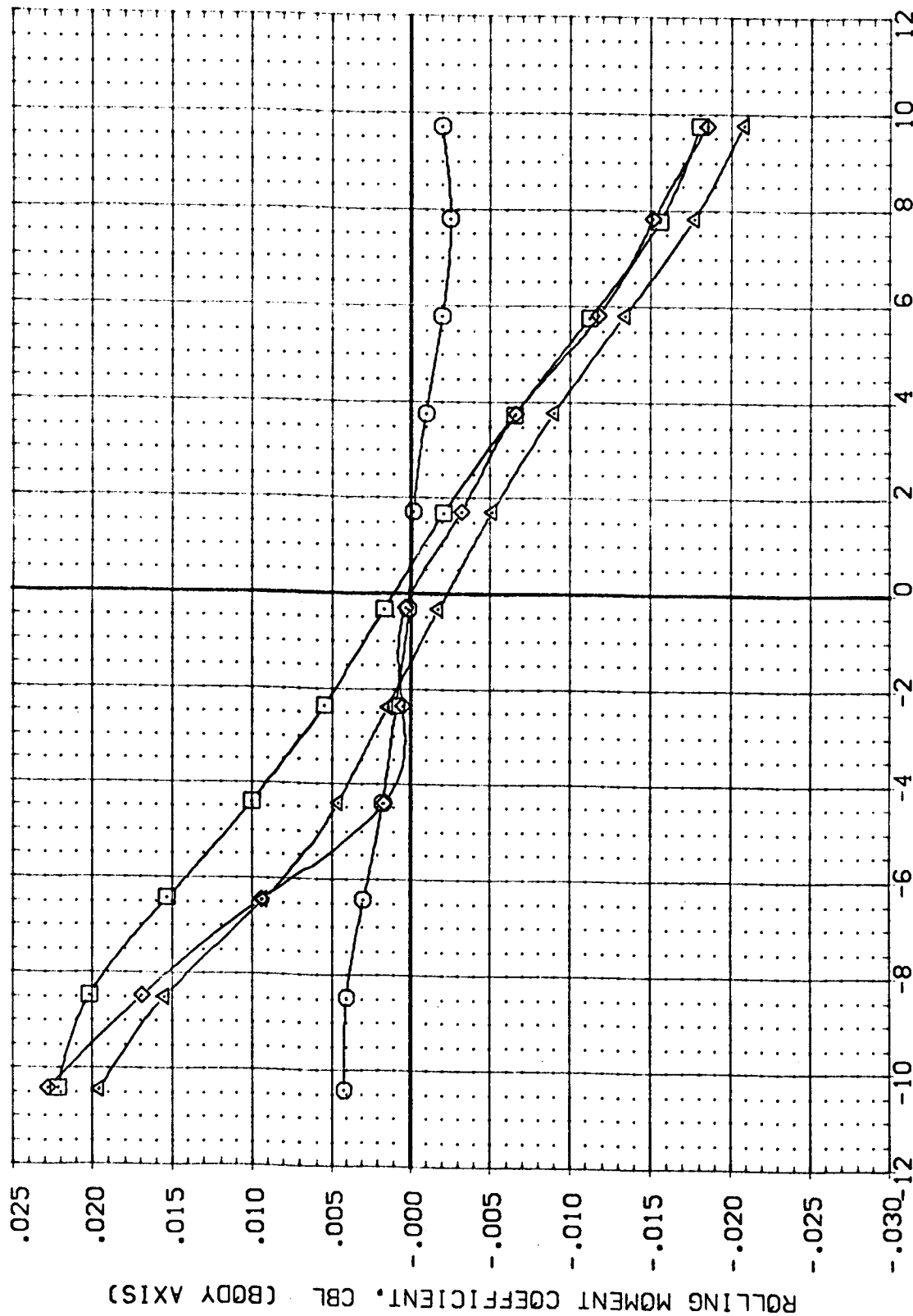


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
{A87010}	MSFC 574(OA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87011}	MSFC 574(OA48) CRB 1398	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87012}	MSFC 574(OA48) CRB 1398	20.000	.000	999.990	.000	SREF 936.7000 IN.
{A87013}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XREF 838.7000 IN.
{A87014}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YREF .0000 IN.
						ZREF .0040 IN.
						SCALE

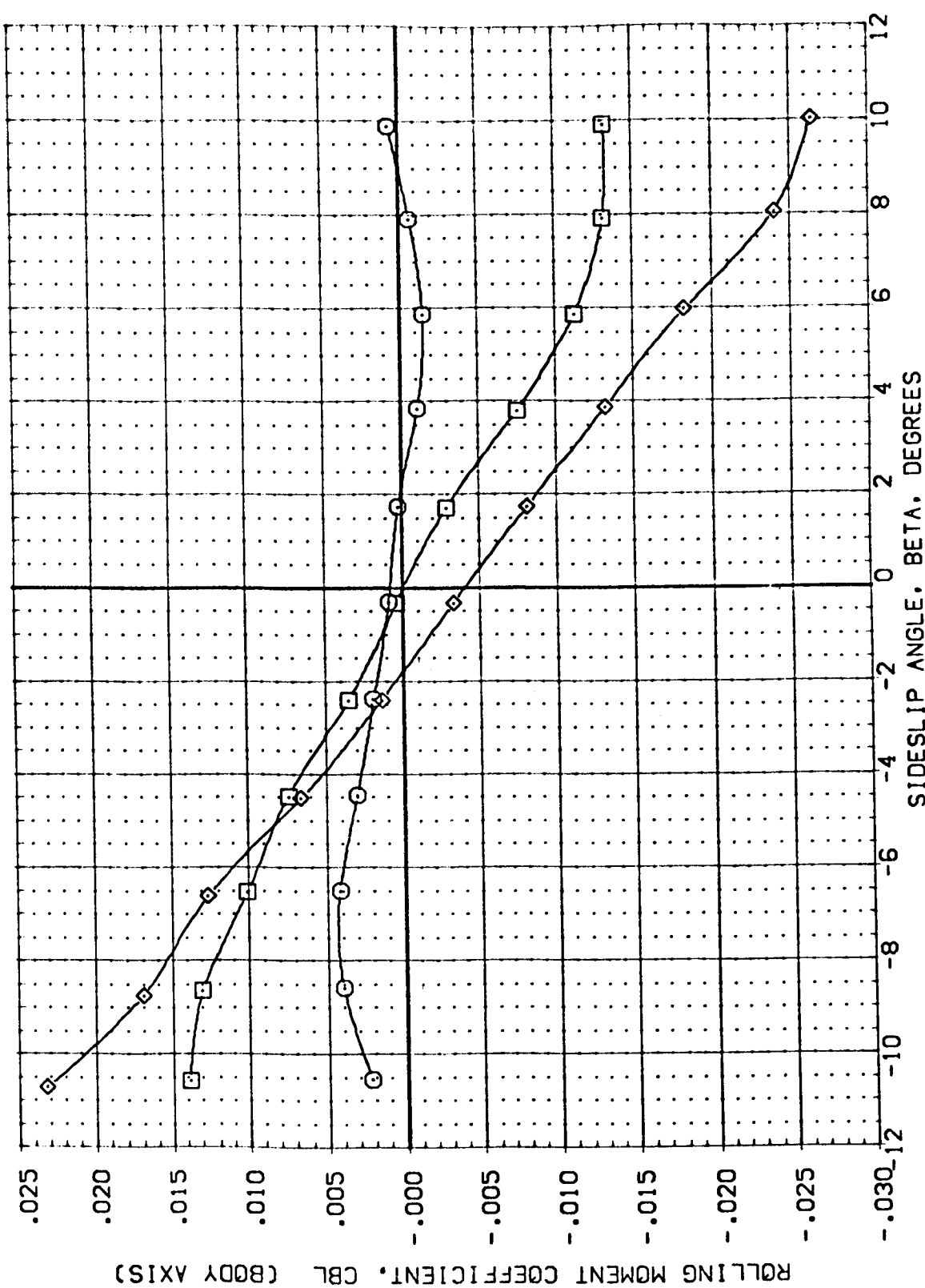


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398
 (B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SFOBRK	BDFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA18) ORB 139B	.000	.000	999.990	.000	SRF 7690.000
(A87011)	MSFC 574(CA18) ORB 139B	10.000	.000	999.990	.000	LRF 474.8000
(A87012)	MSFC 574(CA18) CRB 139B	20.000	.000	999.990	.000	BREF 936.7000
(A87013)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87014)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0043

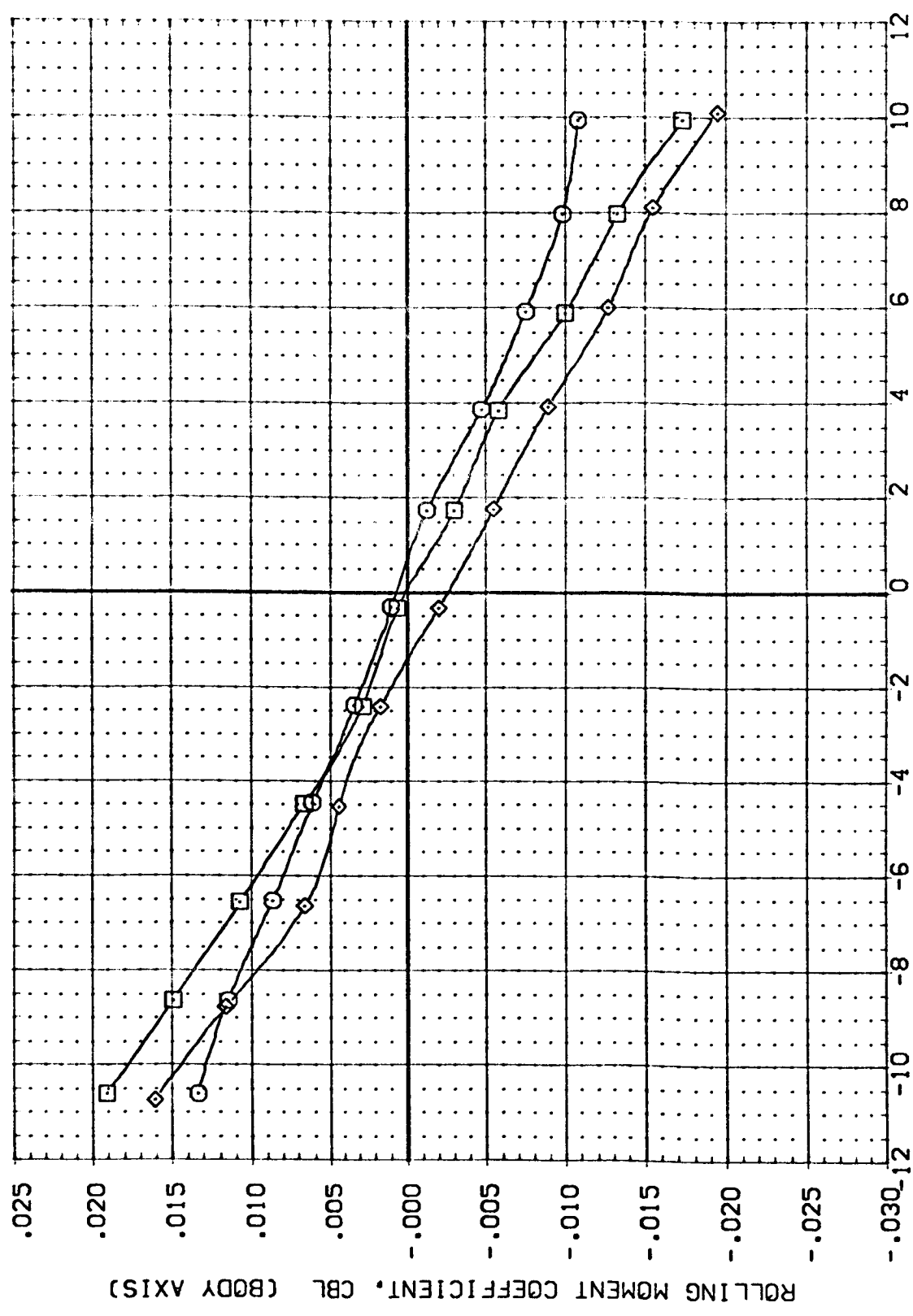


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87011)	MSFC 574(CA48) CRB 1393	10.000	.000	999.990	.000	LREF 474.8000 N.
(A87012)	MSFC 574(CA48) CRB 1393	20.000	.000	999.990	.000	BREF 936.7000 N.
(A87013)	MSFC 574(CA48) CRB 1393	30.000	.000	999.990	.000	XREF 838.7000 N.
(A87014)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YREF .0000 N.
						ZREF .0000 N.
						SCALE .0040

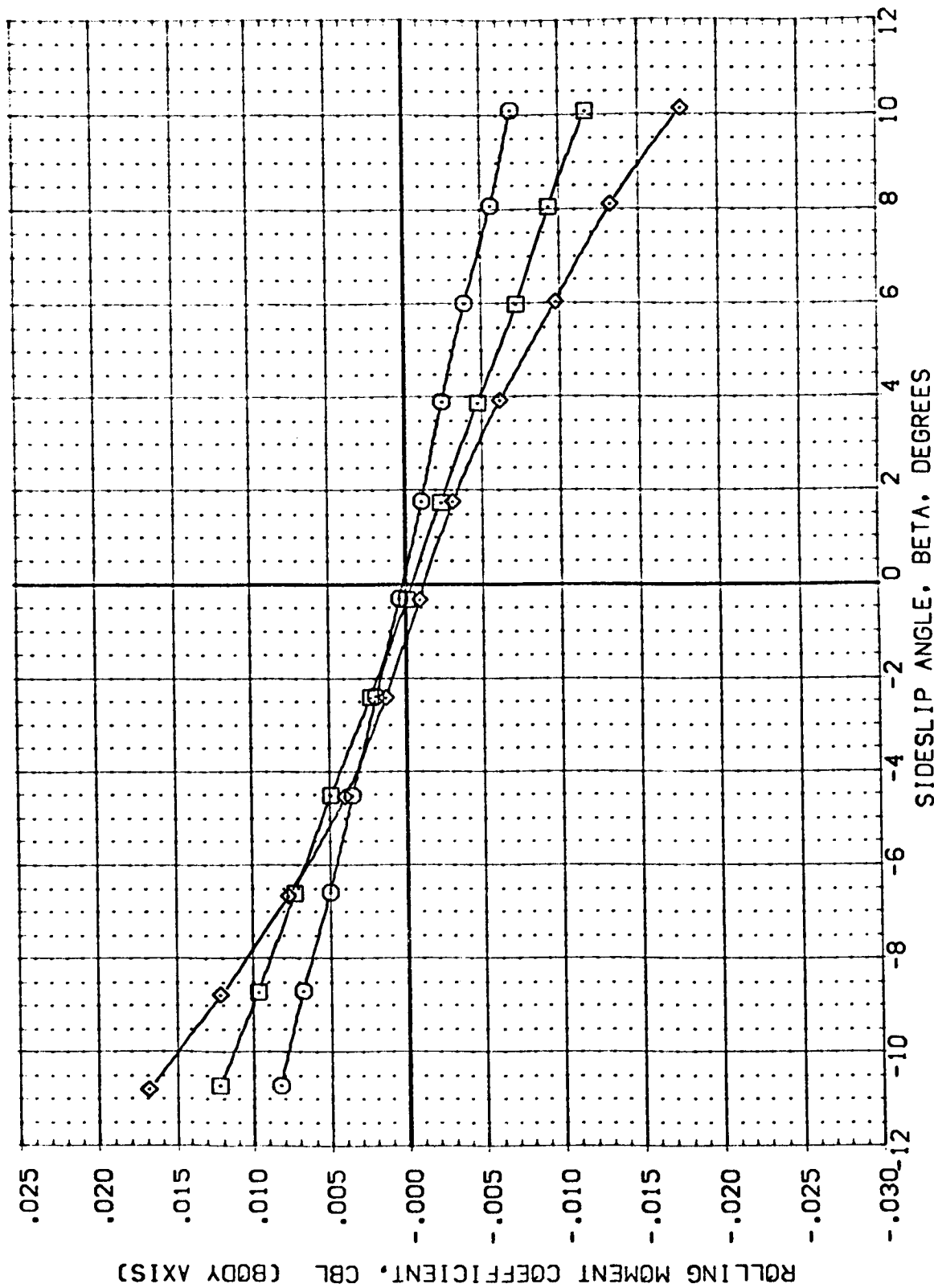


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(D)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87C:0) MSFC 574(CA48) ORB 139B
 (A87C:1) MSFC 574(CA48) CRB 139B
 (A87C:2) MSFC 574(CA48) CRB 139B
 (A87C:3) MSFC 574(CA48) CRB 139B
 (A87C:4) DATA NOT AVAILABLE

ALPHA ELEVTR SPDBRK BOFLAP
 .000 .000 999.990 .000
 10.000 .000 999.990 .000
 20.000 .000 999.990 .000
 30.000 .000 999.990 .000
 40.000 .000 999.990 .000

REFERENCE INFORMATION
 SREF 7690.0000 SC.FT.
 LREF 474.8000 IN.
 BRFF 936.7000 IN.
 XVRP 838.7000 IN.
 YVRP .0000 IN.
 ZVRP .0000 IN.
 SCALE .0010

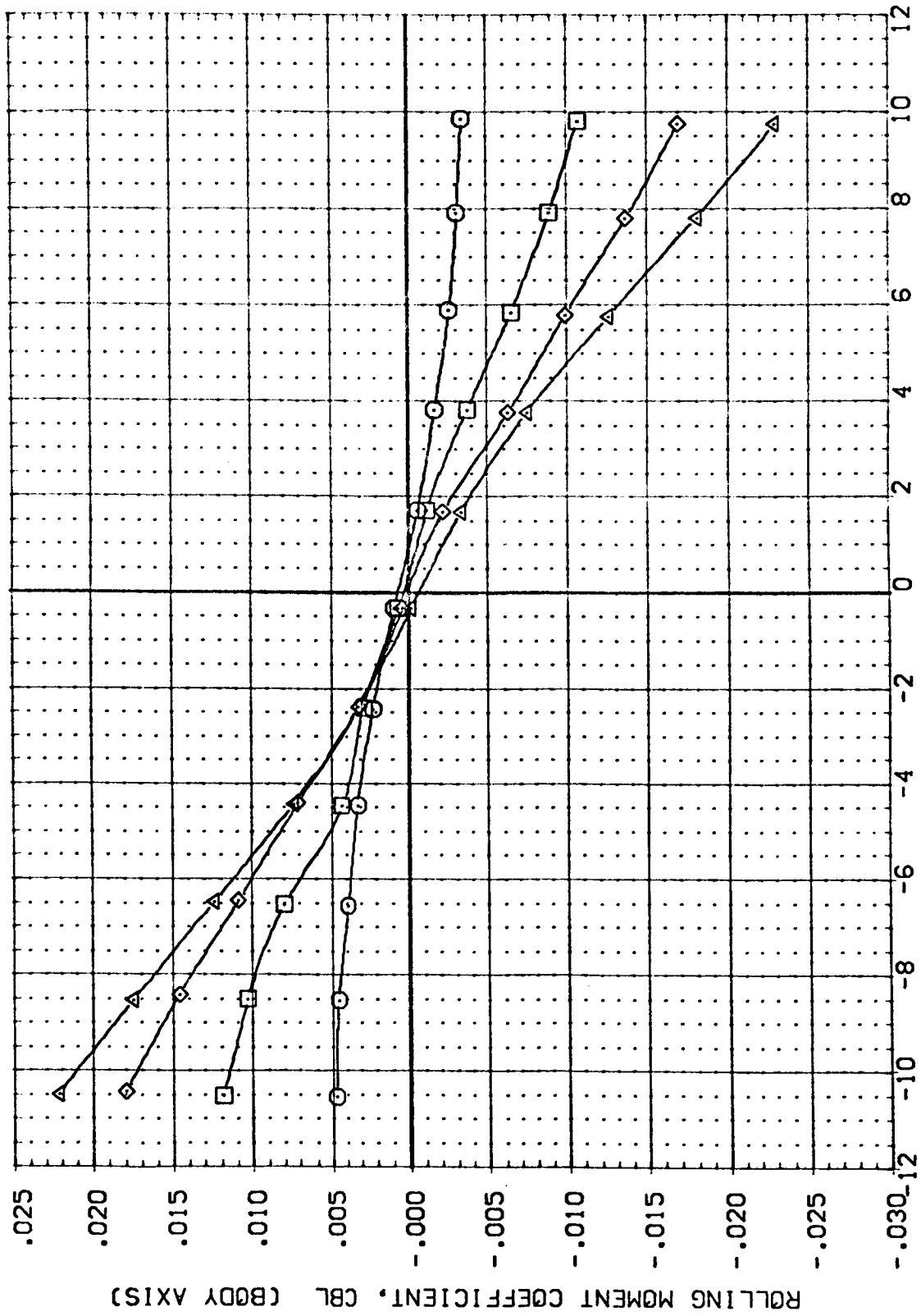


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
(A87010)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	SREF 7690.0000 SC.F.T.
(A87011)	MSFC 574 (CA48) CRB 1399	.01.000	.000	999.990	.000	LREF 474.8000 IN.
(A87012)	MSFC 574 (CA48) CRB 1398	.20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87013)	MSFC 574 (CA48) CRB 1398	.30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87014)	MSFC 574 (CA48) CRB 1398	.40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

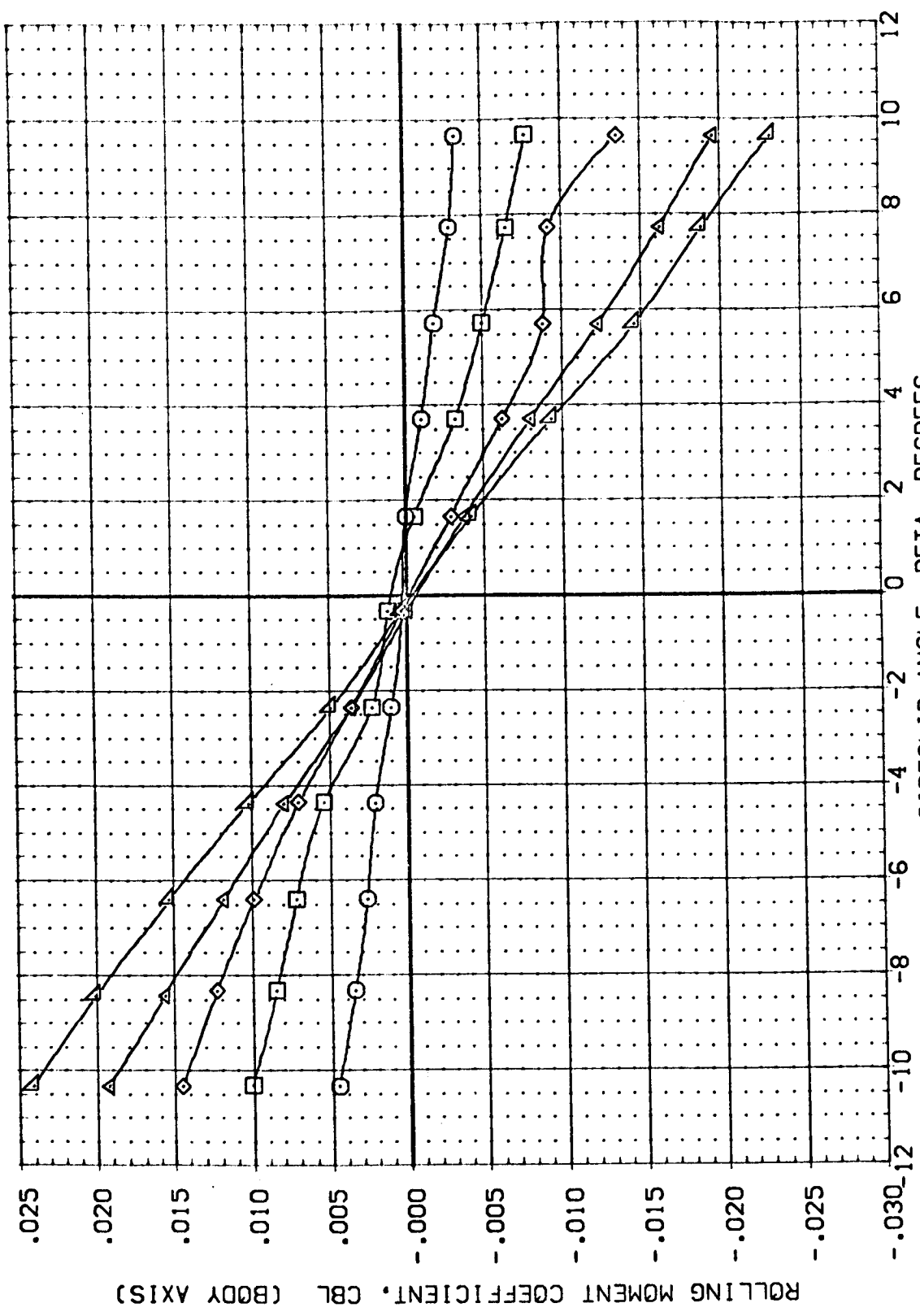


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87034)	MSFC 574(CA48) CRB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(CA48) CRB 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(CA48) CRB 139B W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

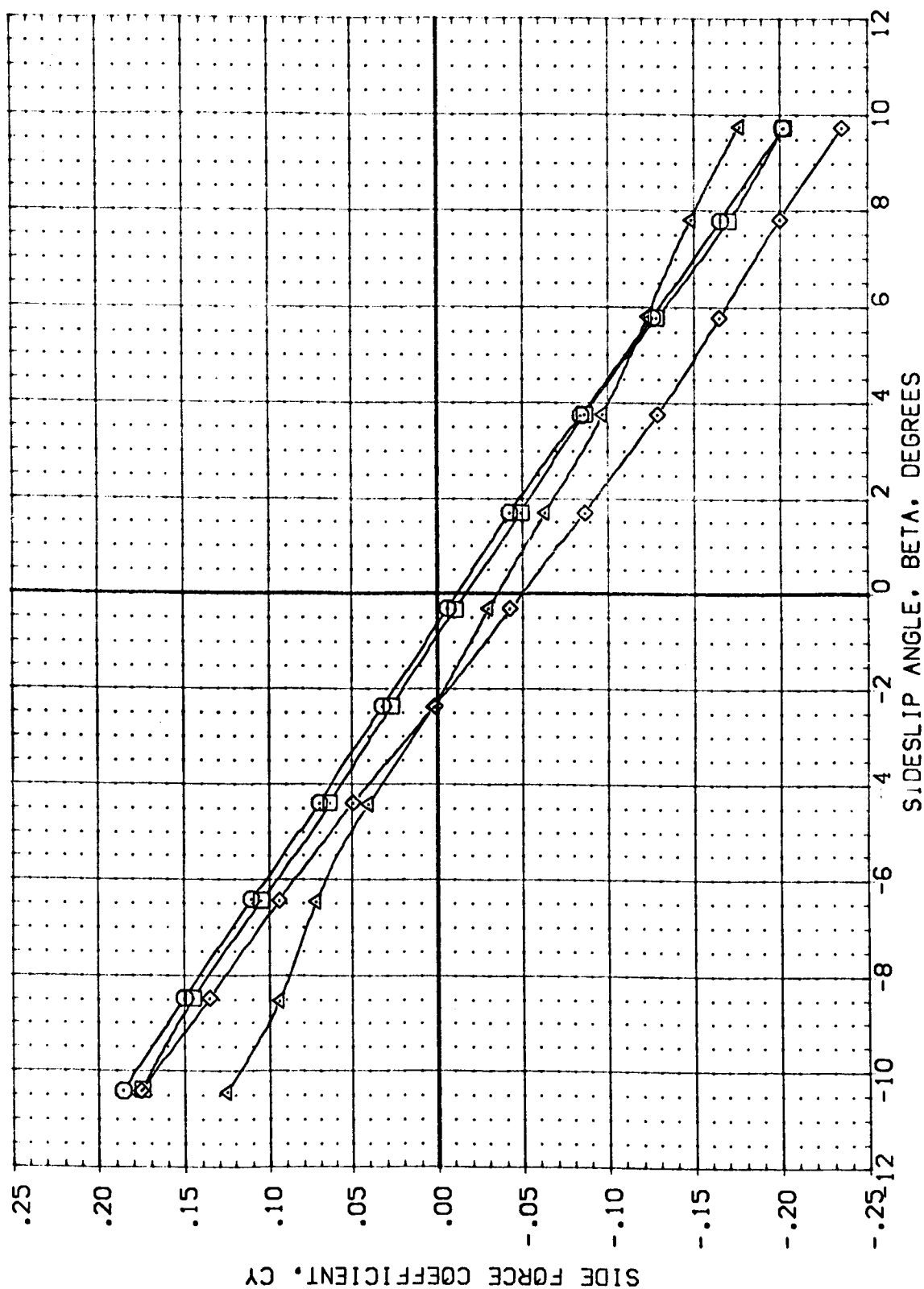


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(A)MACH = .61

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSFC 574(CA48) CRB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSFC 574(CA48) CRB 139B W/ALT NOSE	30.000	.000	999.990	.000	BREF 936.7000
(A87036)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	XMRP 838.7000
(A87037)	DATA NOT AVAILABLE					YMRP .0000
						ZMRP .0000
						SCALE .0040
						SG.FT.

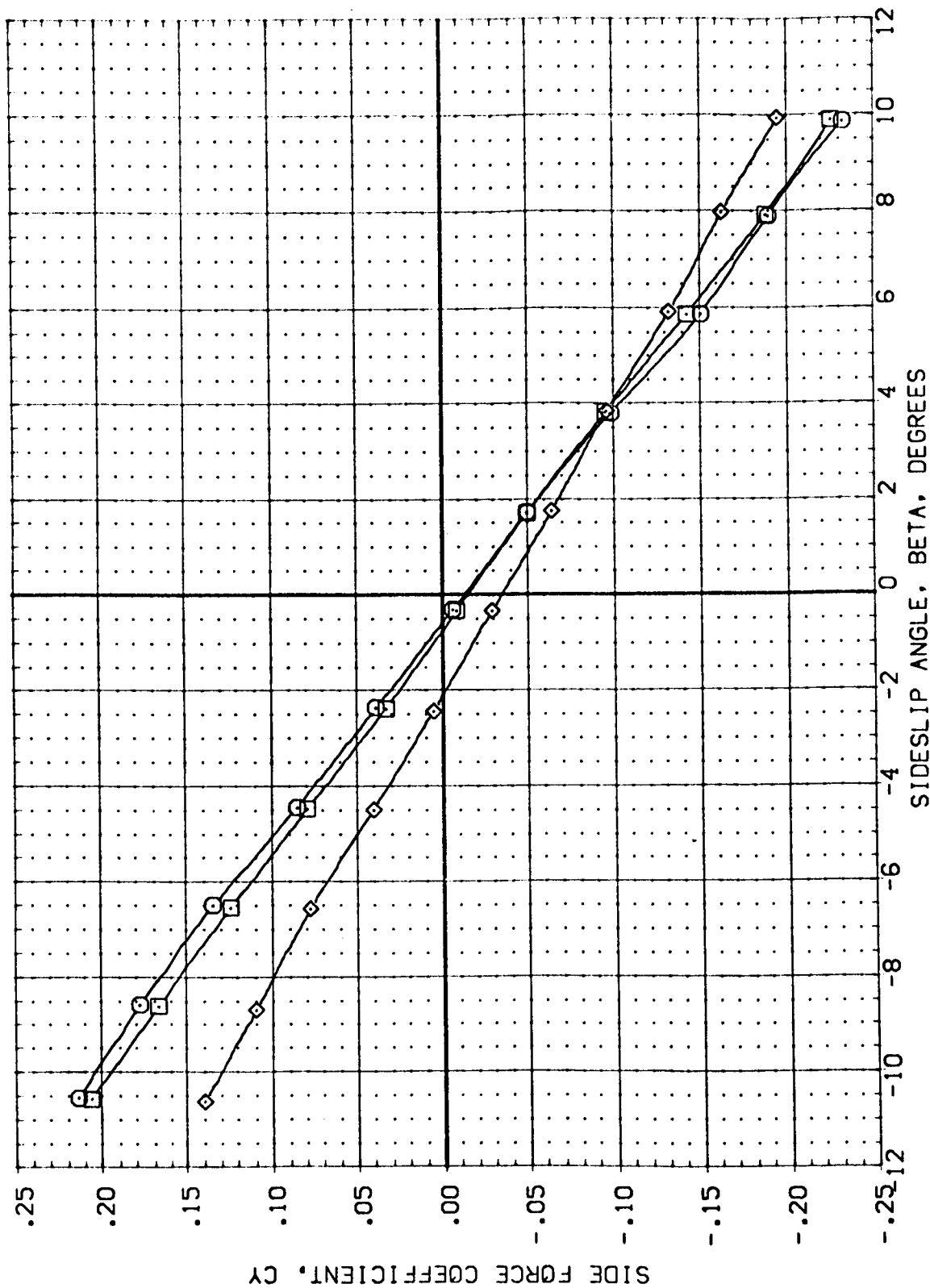


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
{A87033}	MSFC 574(OA48) ORB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87034}	MSFC 574(OA48) ORB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87035}	MSFC 574(OA48) ORB 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 935.7000 IN.
{A87036}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
{A87037}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						SCALE .0040

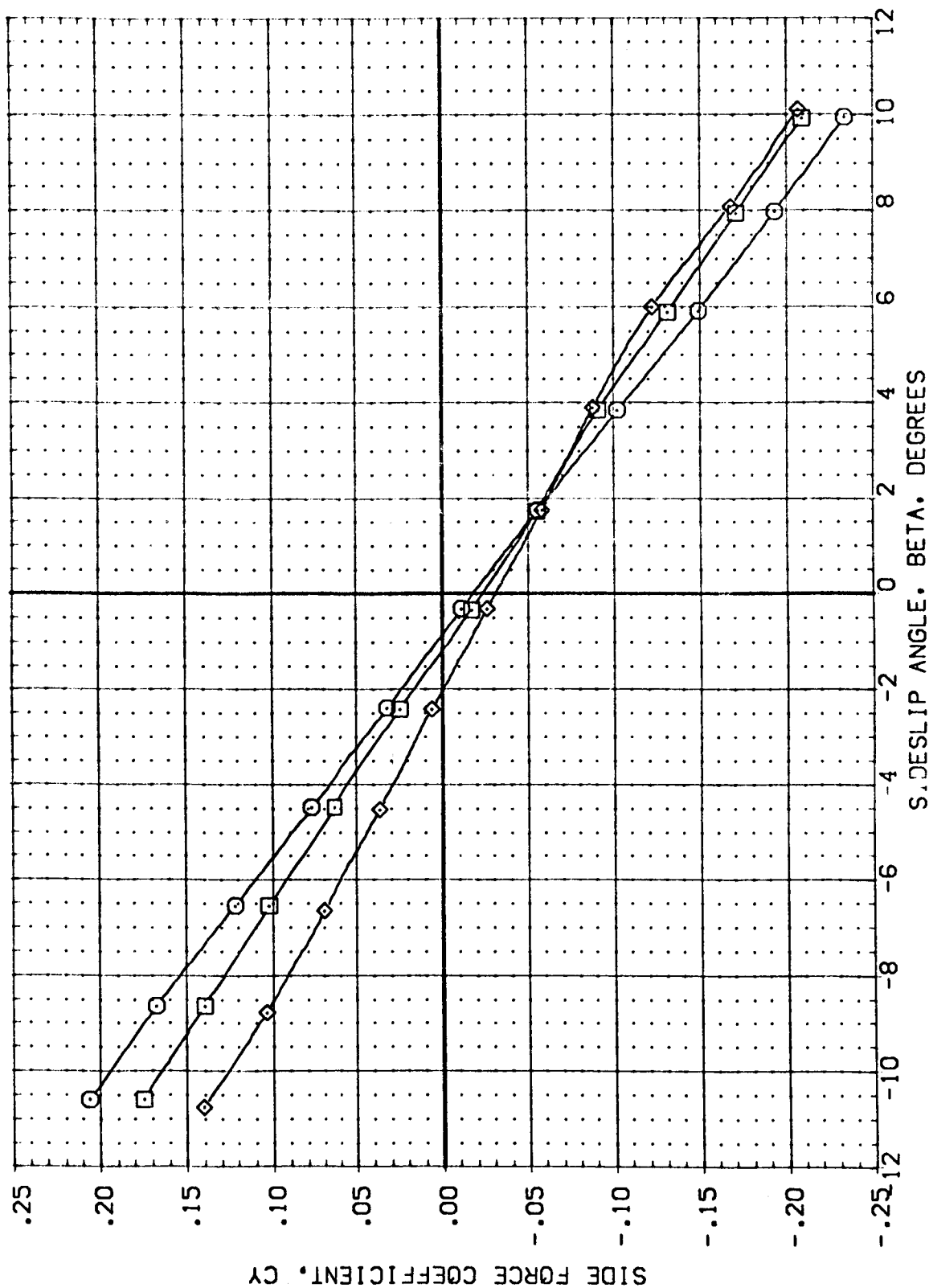


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CR8 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSFC 574(CA48) CR8 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSFC 574(CA48) CR8 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

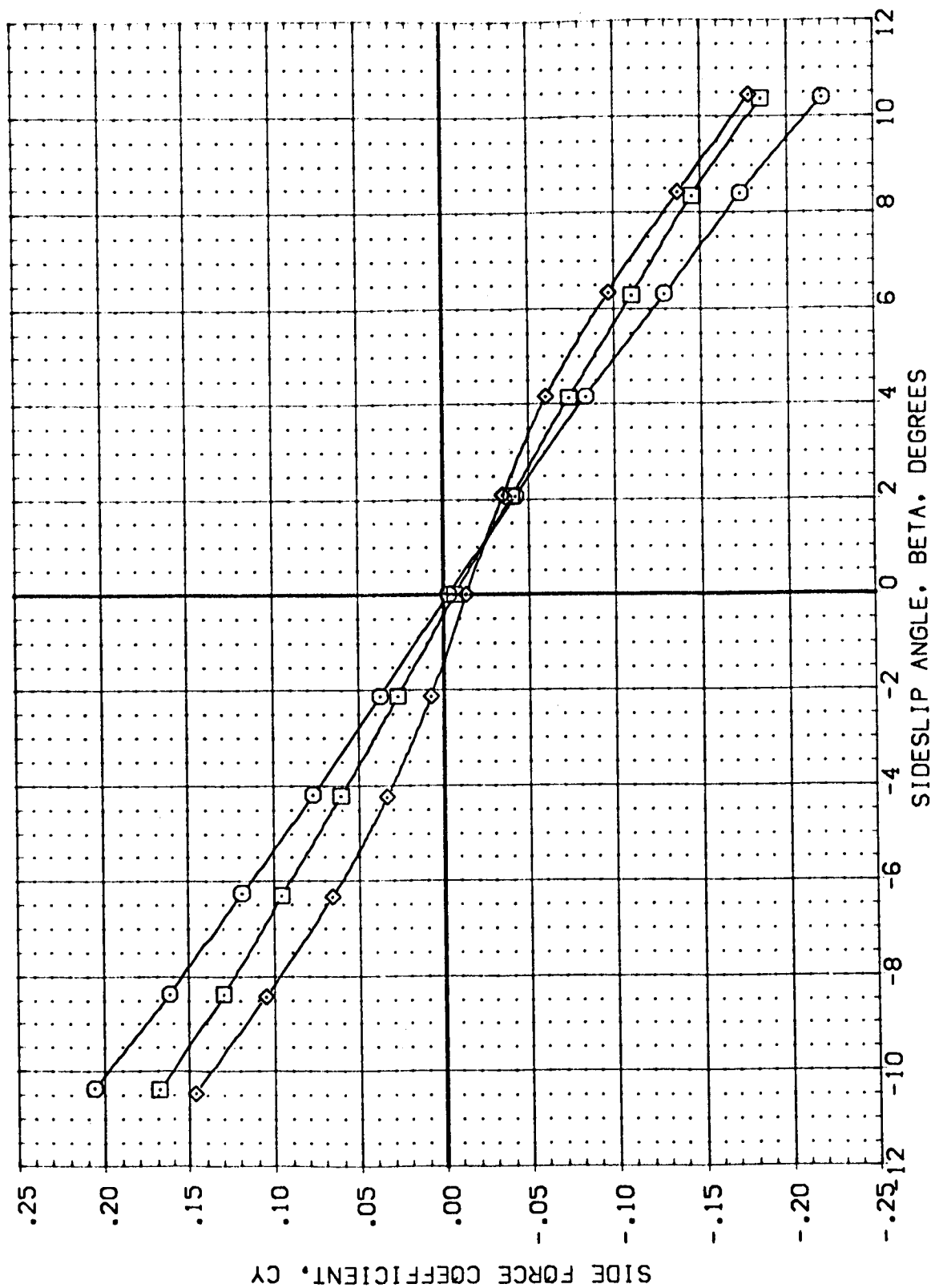


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(D)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574 (QA48) CRB 1398 W/ALT N0SE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87034)	MSFC 574 (QA48) CRB 1398 W/ALT N0SE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSFC 574 (QA48) CRB 1398 W/ALT N0SE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	MSFC 574 (QA48) CRB 1398 W/ALT N0SE	30.000	.000	999.990	.000	XMRF 838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRF .0000
					.000	ZMRF .0000
					.000	SCALE .0040

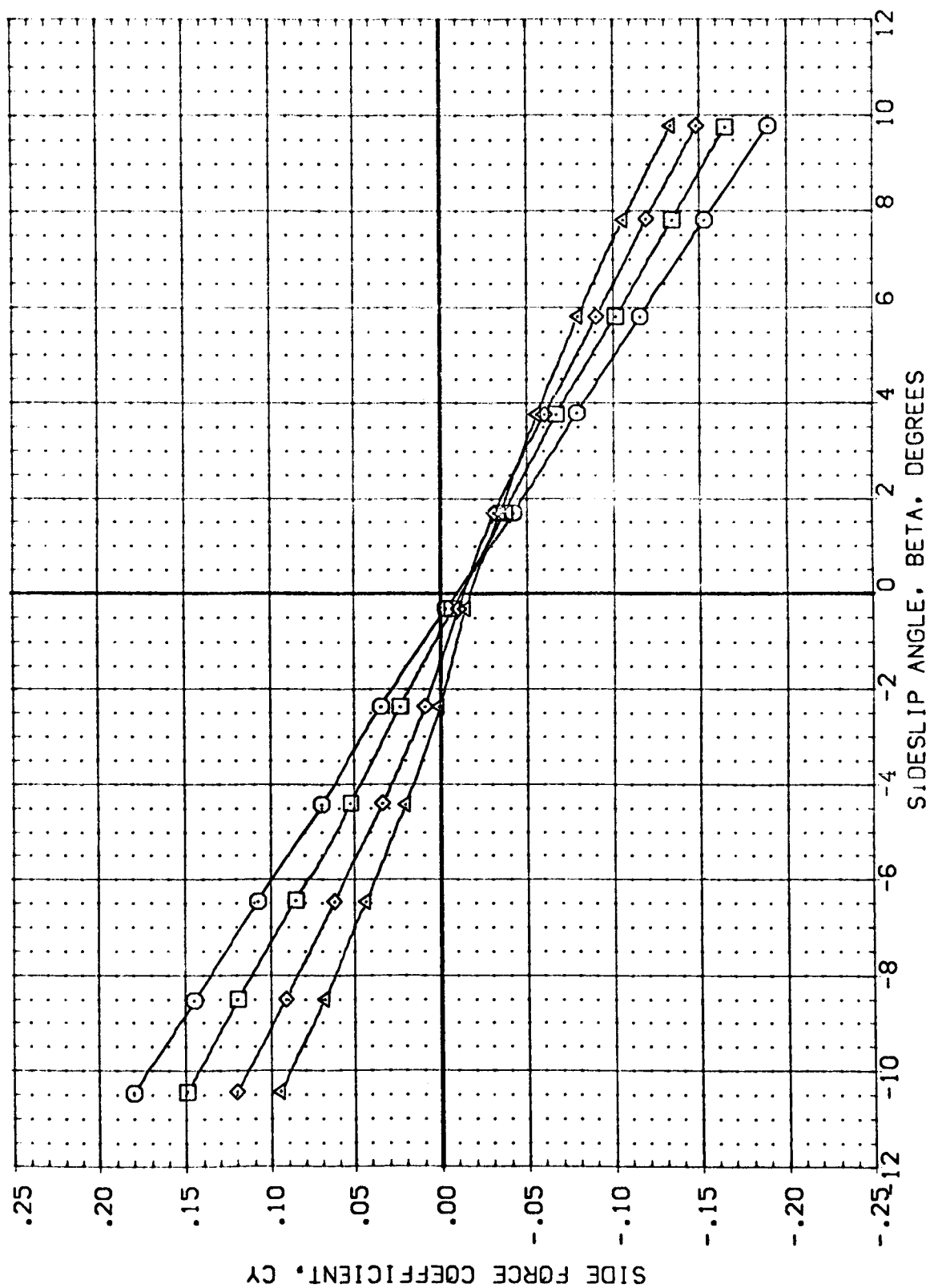


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. N0SE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	SPDBRK	ELEVTR	ALPHA	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	999.990	.000	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	999.990	.000	10.000	LREF 474.8000 IN.
(A87035)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	999.990	.000	20.000	BREF 936.7000 IN.
(A87036)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	999.990	.000	30.000	XMRP 838.7000 IN.
(A87037)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	999.990	.000	40.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

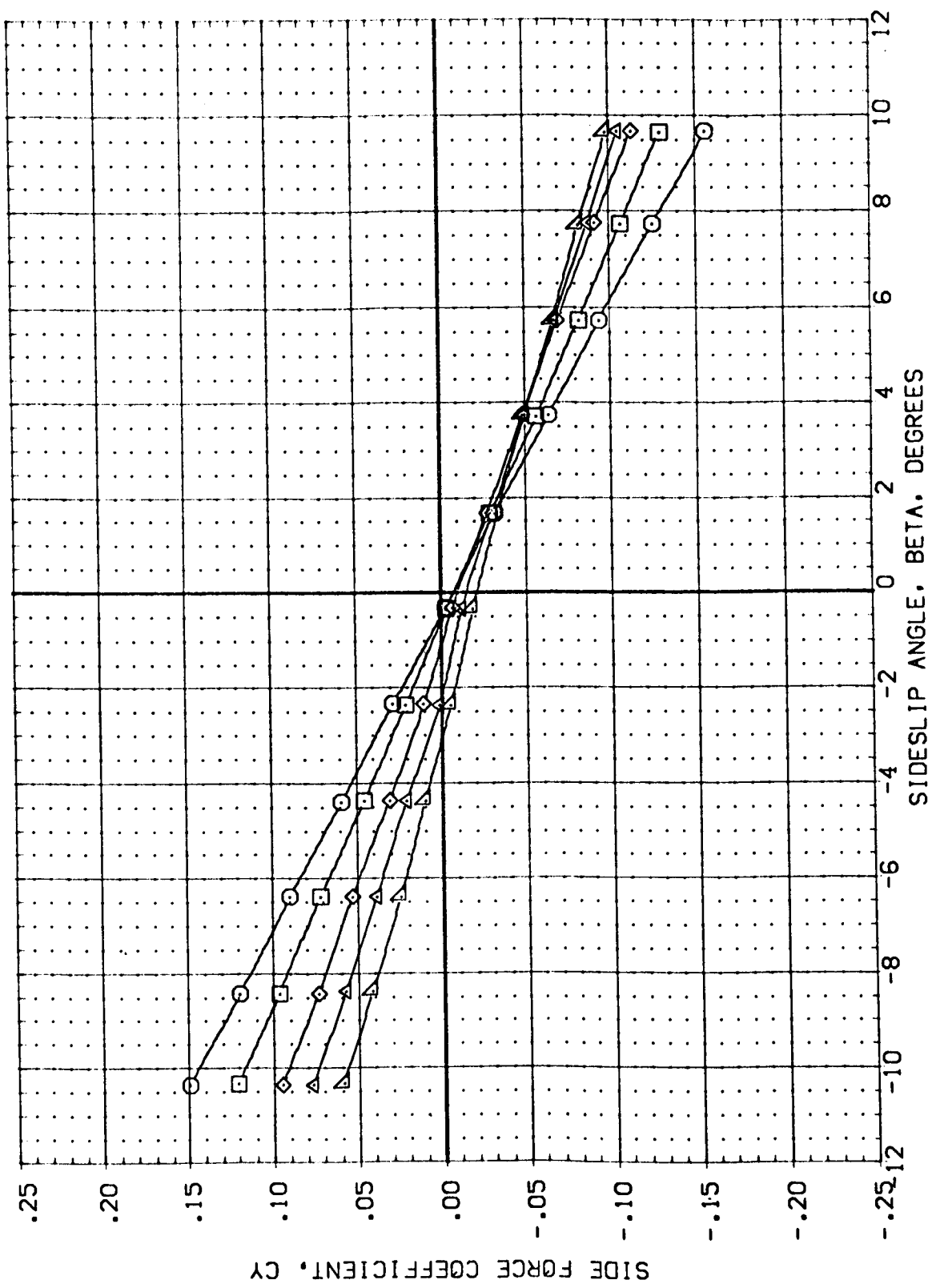


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVATOR	SPCGRK	BOEFLAP	REFERENCE INFORMATION
(A87033)	VSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	SPCF 2990 00000
(A87034)	VSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	REF 4774 00000
(A87035)	VSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	REF 5361 00000
(A87036)	VSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	XVRP 838 00000
(A87037)	DATA NOT AVAILABLE	.000	.000	999.999	.000	VVRP 00000
		.000	.000	999.999	.000	ZVRP 00000
		.000	.000	999.999	.000	SCALE 00000

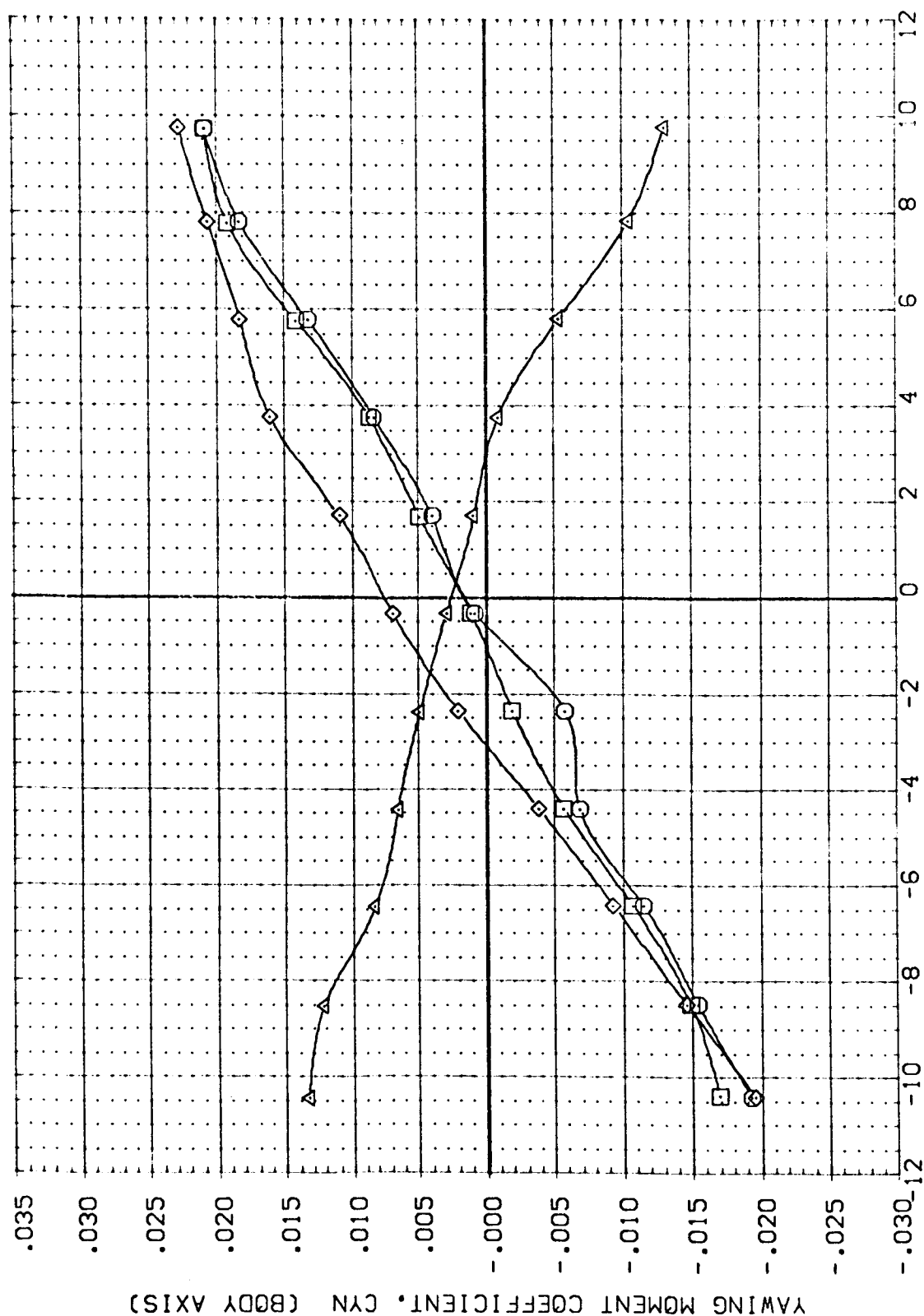


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

CADMAC- = .6:

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87033) WSFC 574(CA48) CRB 139B W/ALT NOSE

(A87034) WSFC 574(CA48) CRB 139B W/ALT NOSE

(A87035) WSFC 574(CA48) CRB 139B W/ALT NOSE

(A87036) DATA NOT AVAILABLE

(A87037) DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SCALE

.000 .000 999.990 .000 SREF 2690.0000

10.000 .000 999.990 .000 LREF 474.8000

20.000 .000 999.990 .000 RREF 836.0000

30.000 .000 999.990 .000 XREF 838.0000

40.000 .000 999.990 .000 YREF .0000

SCALE .0000

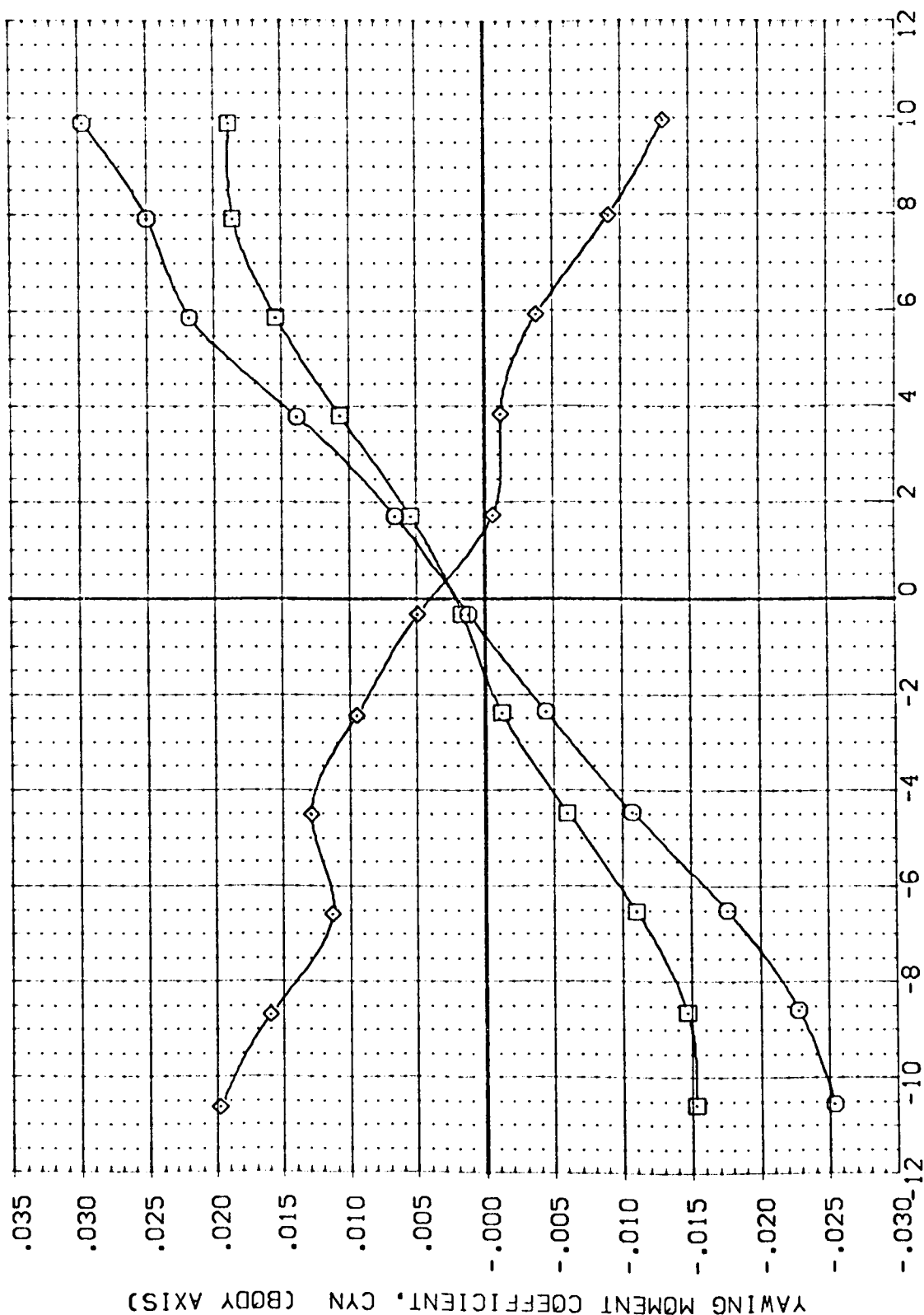


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(B) VACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
{A87033}	MSEC 574(CA48) CR3 139B V/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
{A87034}	MSEC 574(CA48) CR3 139B V/ALT NCSE	.000	.000	999.990	.000	LREF 474.8000
{A87035}	MSEC 574(CA48) CR3 139B V/ALT NCSE	.000	.000	999.990	.000	BREF 936.7000
{A87036}	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
{A87037}	DATA NOT AVAILABLE	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

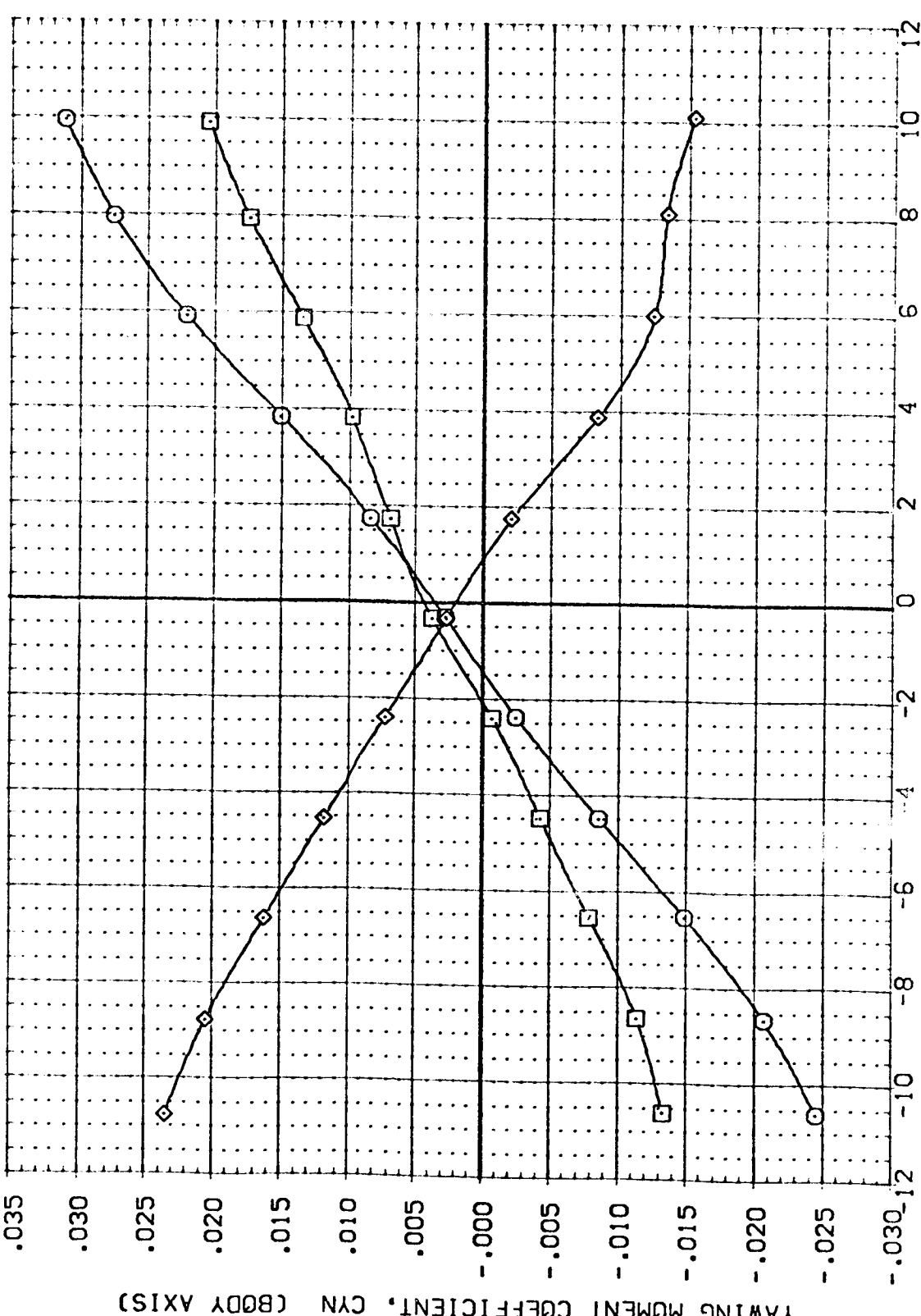


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 (COMACH = 1.20) PAGE 98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87C33)	MSFC 574(CA48) CR8 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87C34)	MSFC 574(CA48) CR8 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87C35)	MSFC 574(CA48) CR8 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 635.7000
(A87C36)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP .0000
(A87C37)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

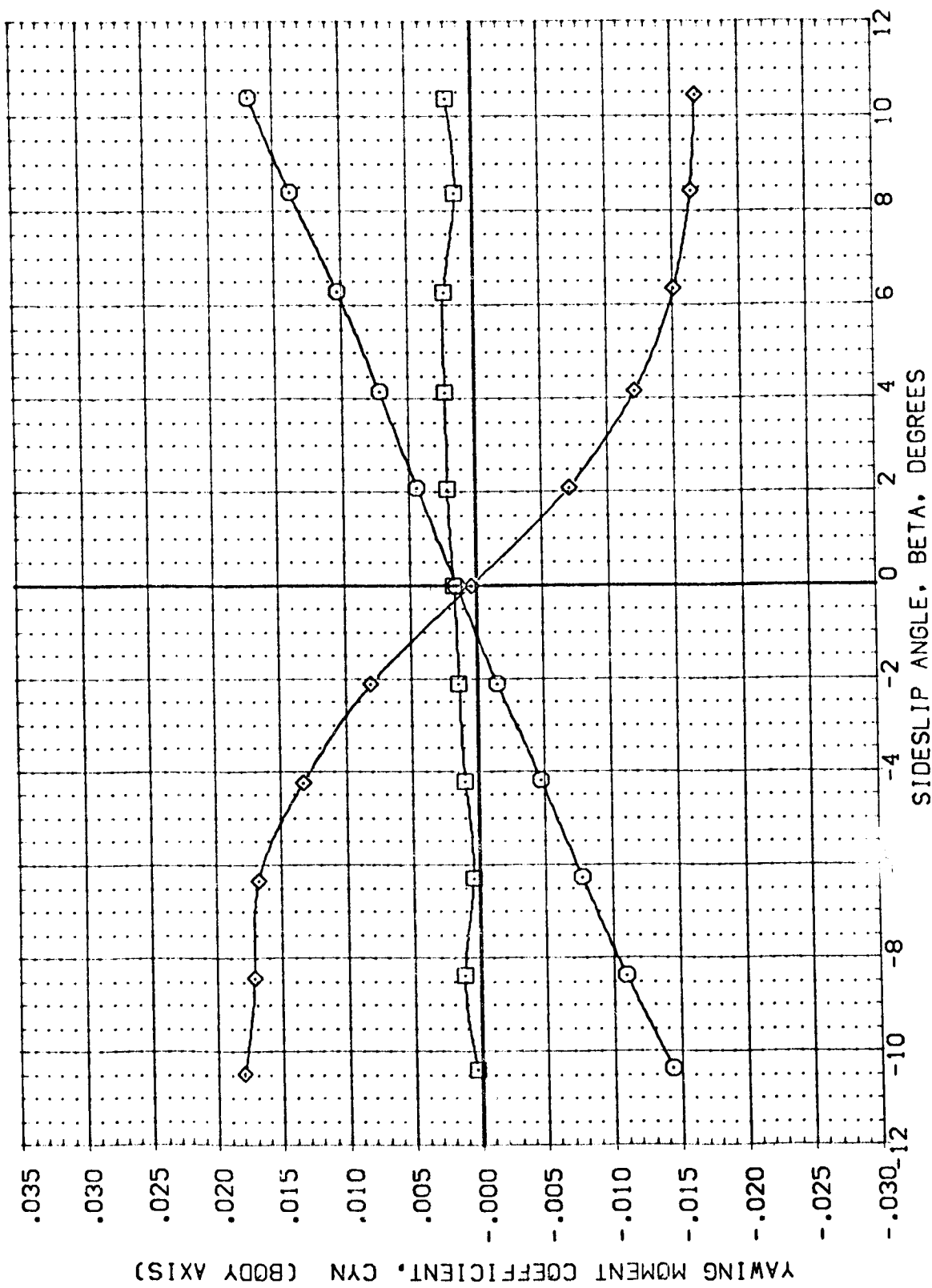


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

() MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION	SC.FT.
(A87033)	MSFC 574(OA48) ORB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(A87034)	MSFC 574(OA48) ORB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF	474.8000
(A87035)	MSFC 574(OA48) ORB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF	936.7000
(A87036)	MSFC 574(OA48) ORB 139B V/ALT NOSE	30.000	.000	999.990	.000	XMRP	838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

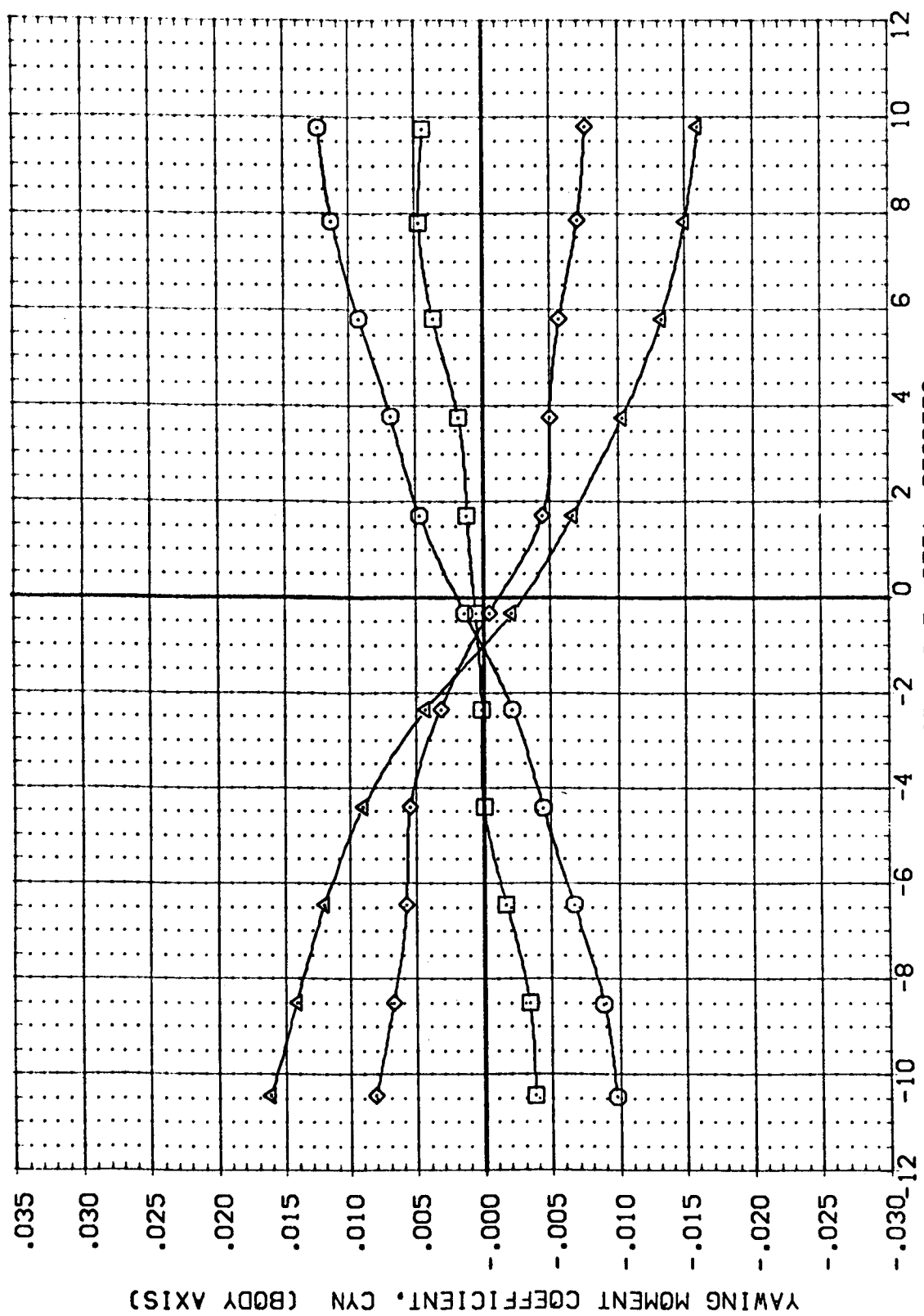


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(OA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(OA48) CRB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(OA48) CRB 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(OA48) CRB 139B W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	MSFC 574(OA48) CRB 139B W/ALT NOSE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

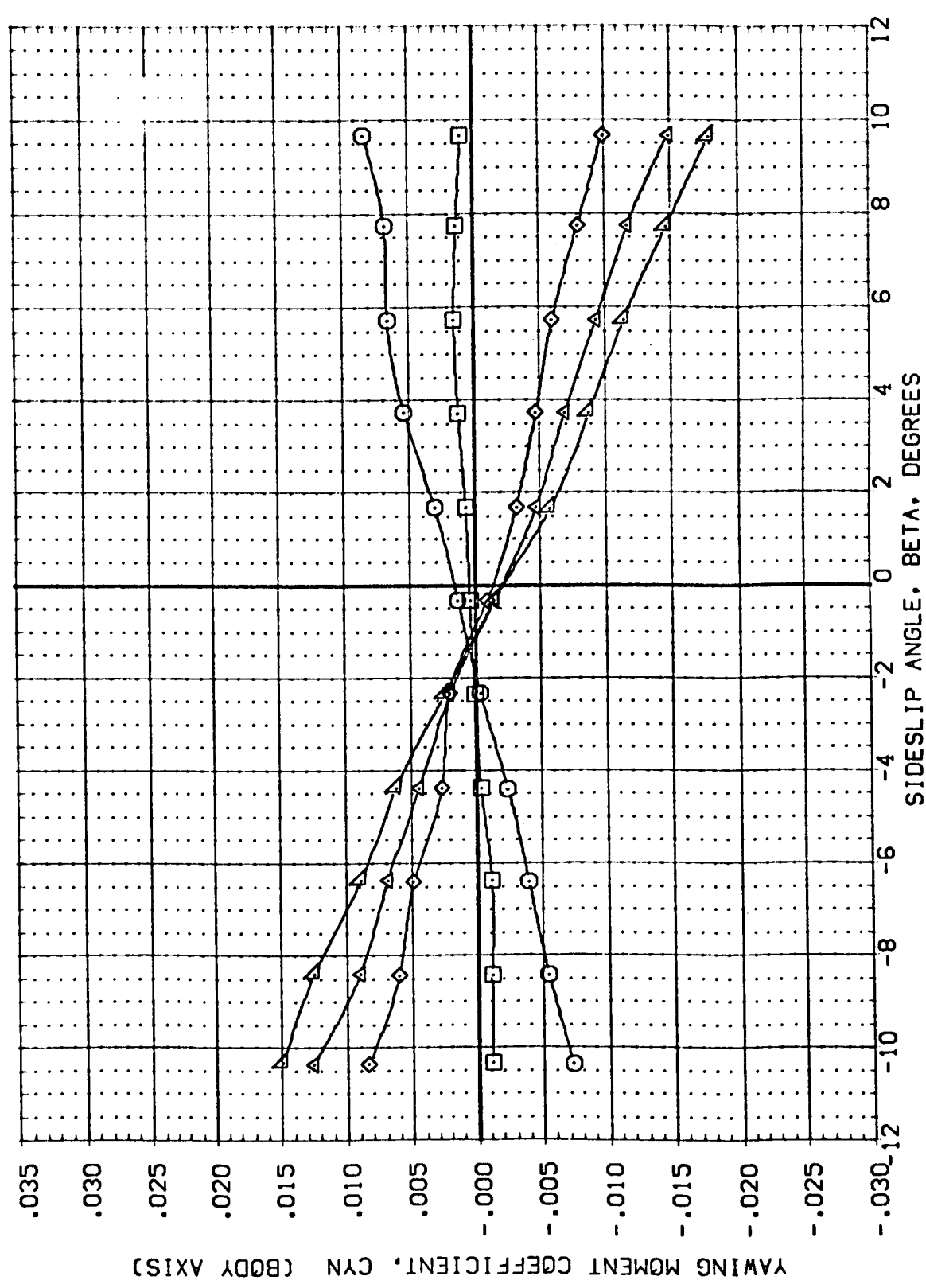


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(CA48) CRB 1398 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

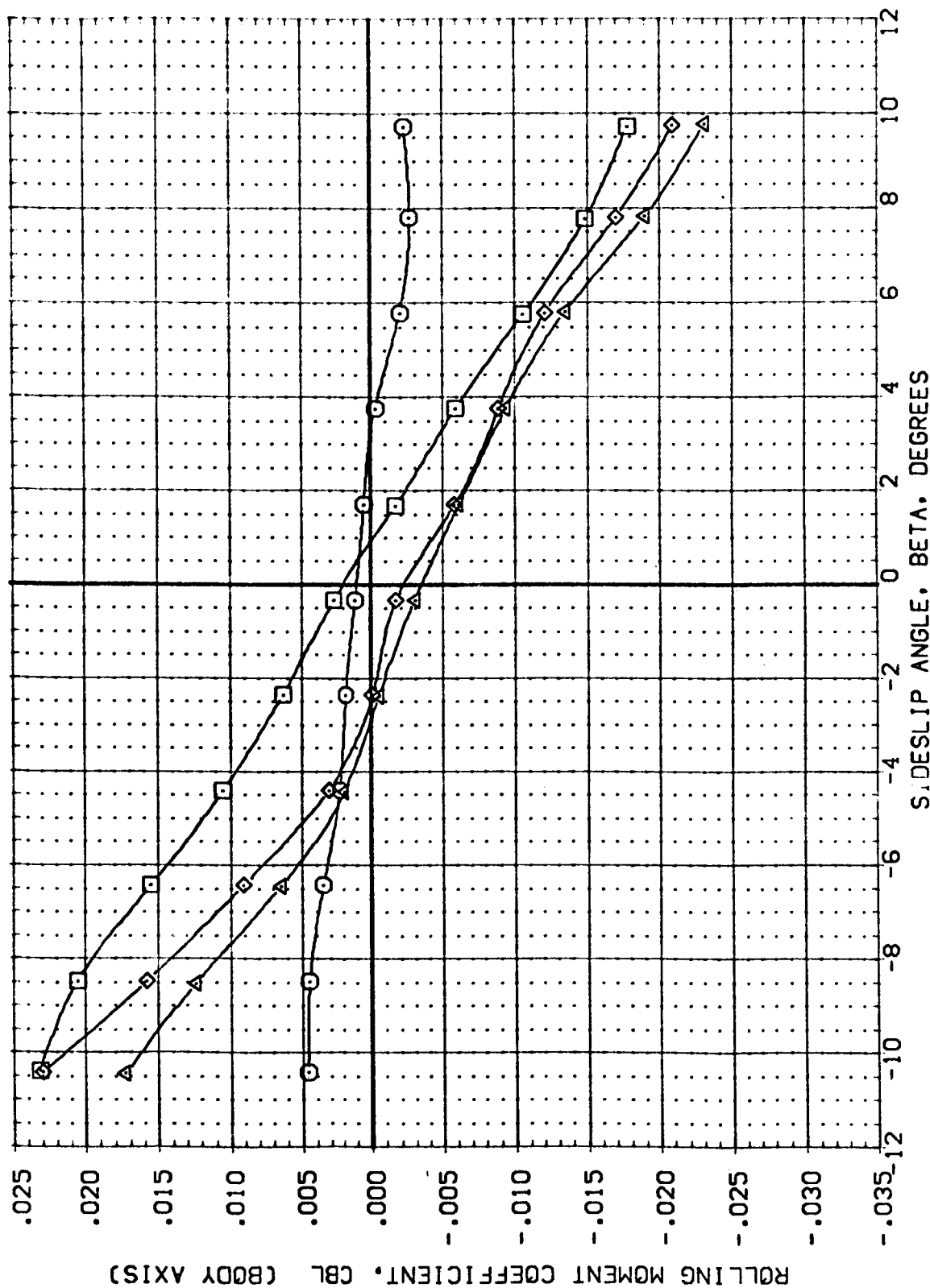


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{A87C33}	MSFC 574(CA48) ORB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87C34}	MSFC 574(CA48) ORB 1398 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87C35}	MSFC 574(CA48) ORB 1398 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
{A87C36}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
{A87C37}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

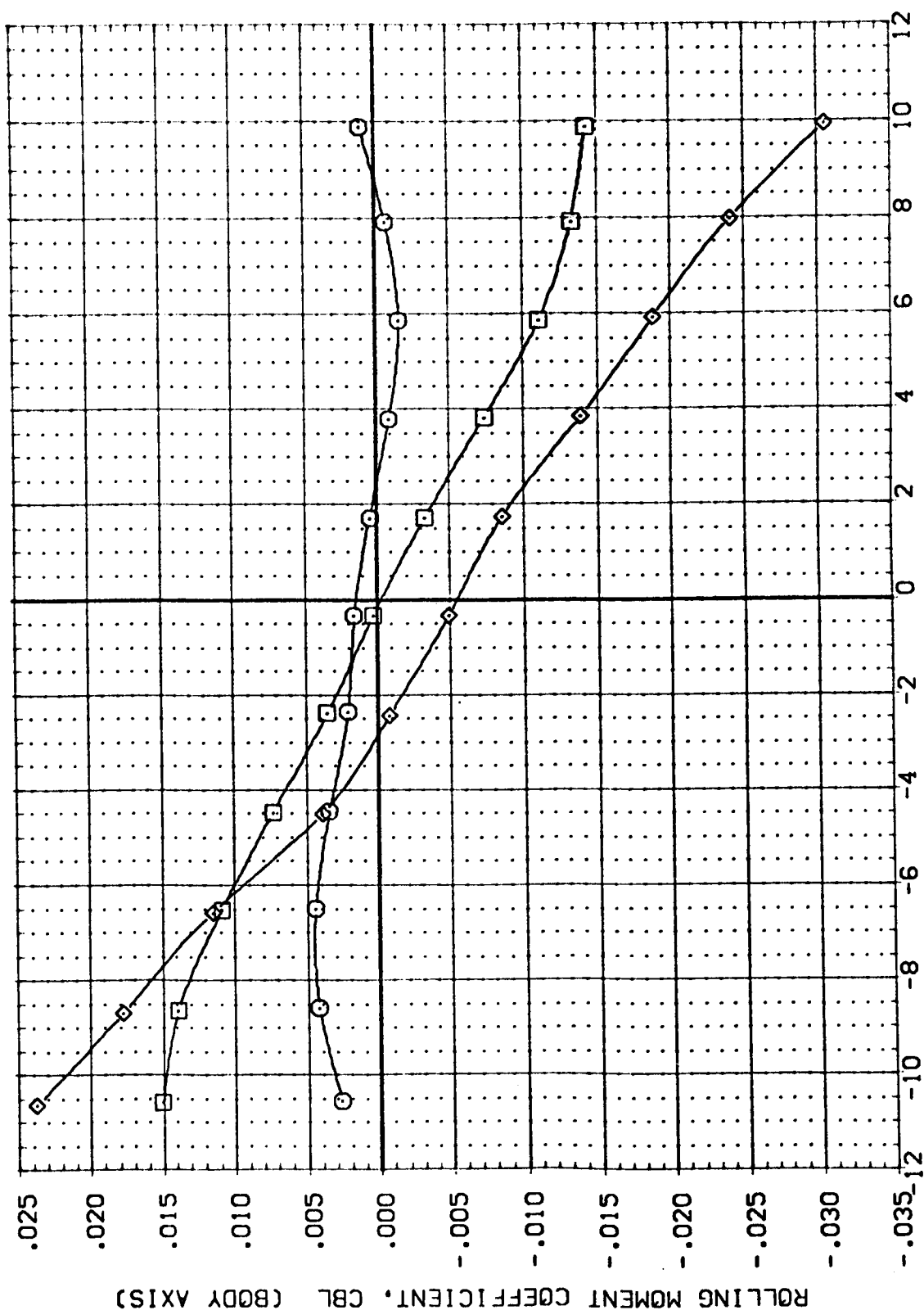


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(0A48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(0A48) CRB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(0A48) CRB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XWRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YWRP .0000 IN.
						ZWRP .0000 IN.
						SCALE .0040

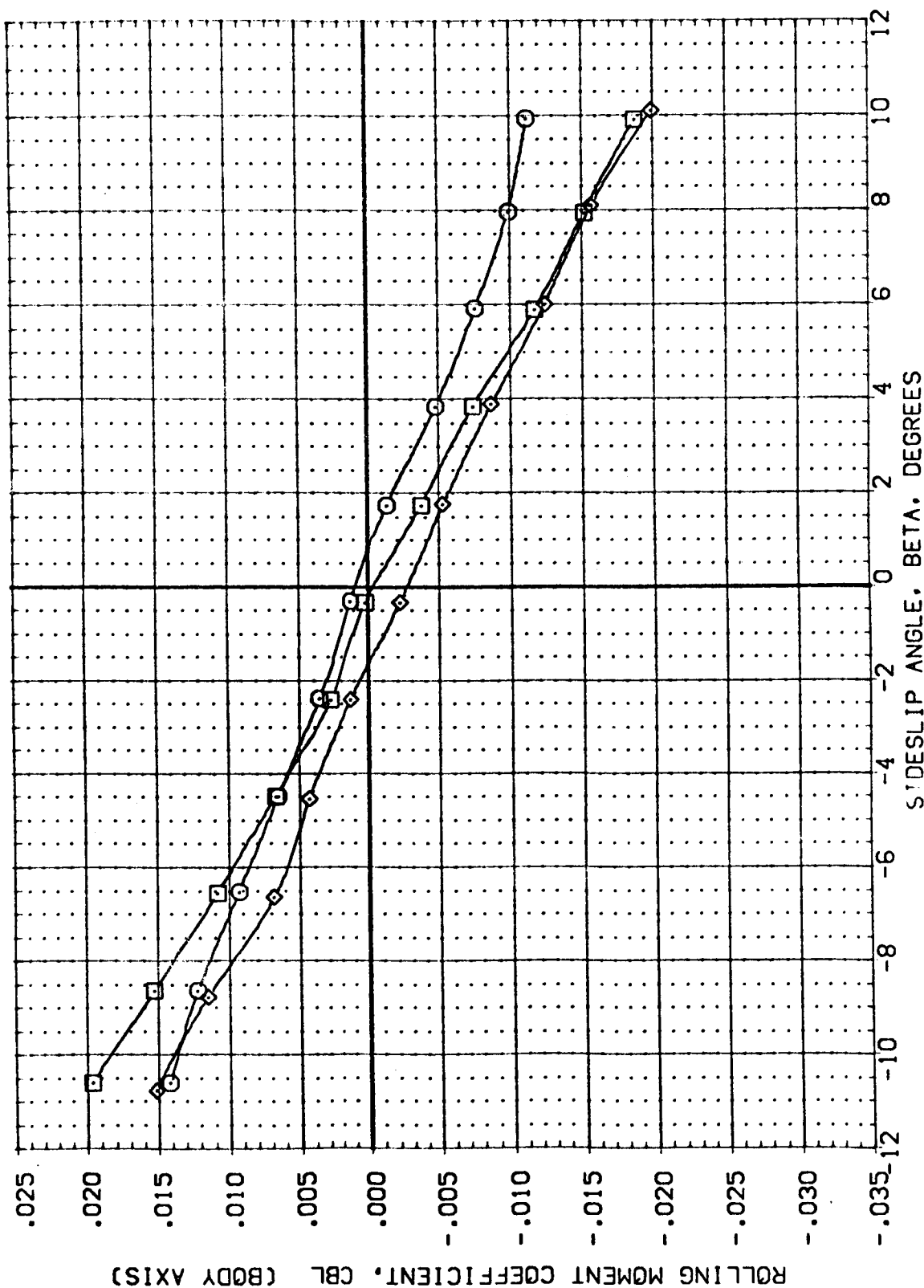


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
{A87033}	MSFC 574(OA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87034}	MSFC 574(OA48) CRB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87035}	MSFC 574(OA48) CRB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
{A87036}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	XMRP 838.7000 IN.
{A87037}	DATA NOT AVAILABLE		.000	999.990	.000	YMRP .0000 IN.
					ZMRP .0000 IN.	SCALE .0040

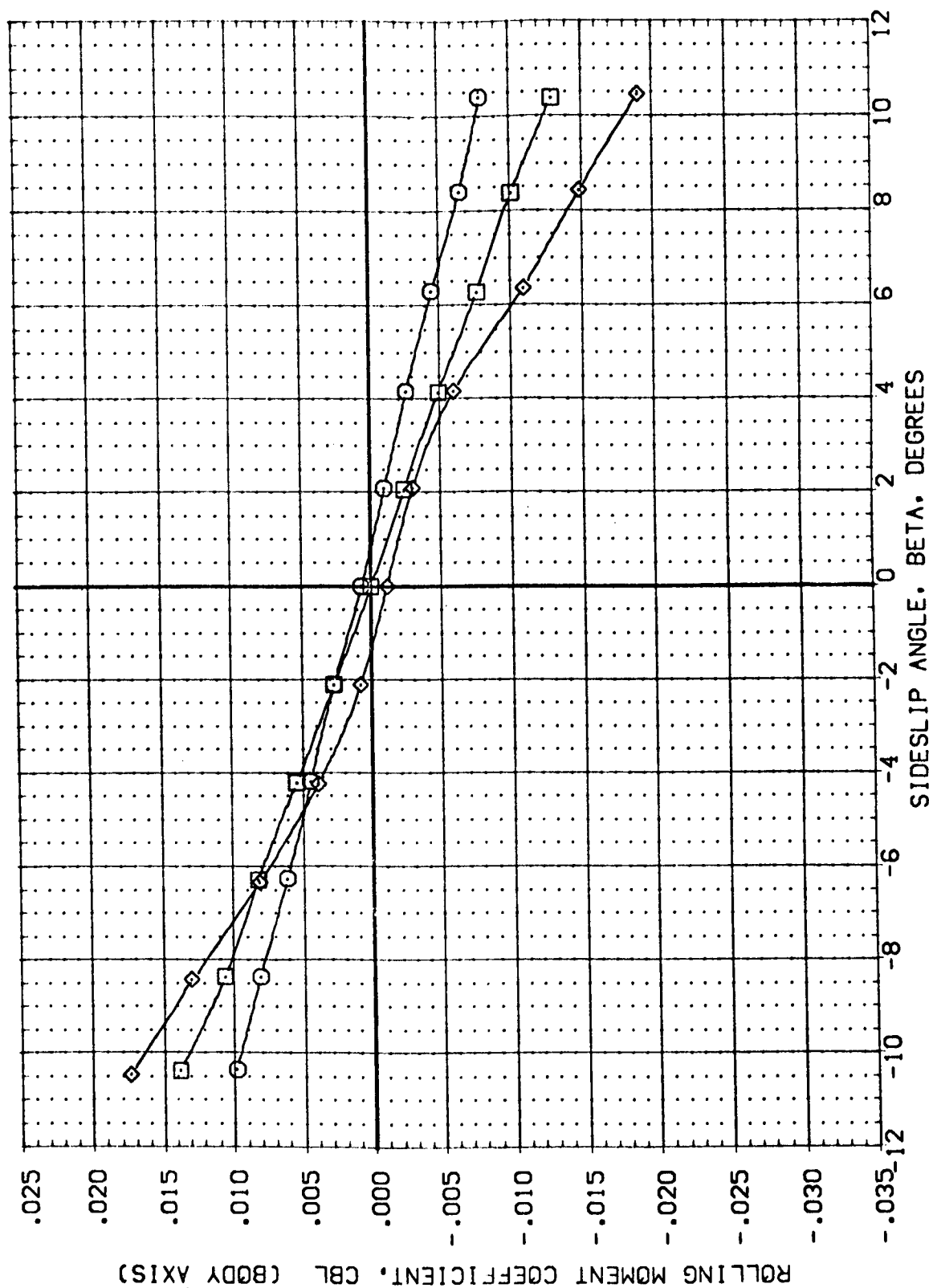
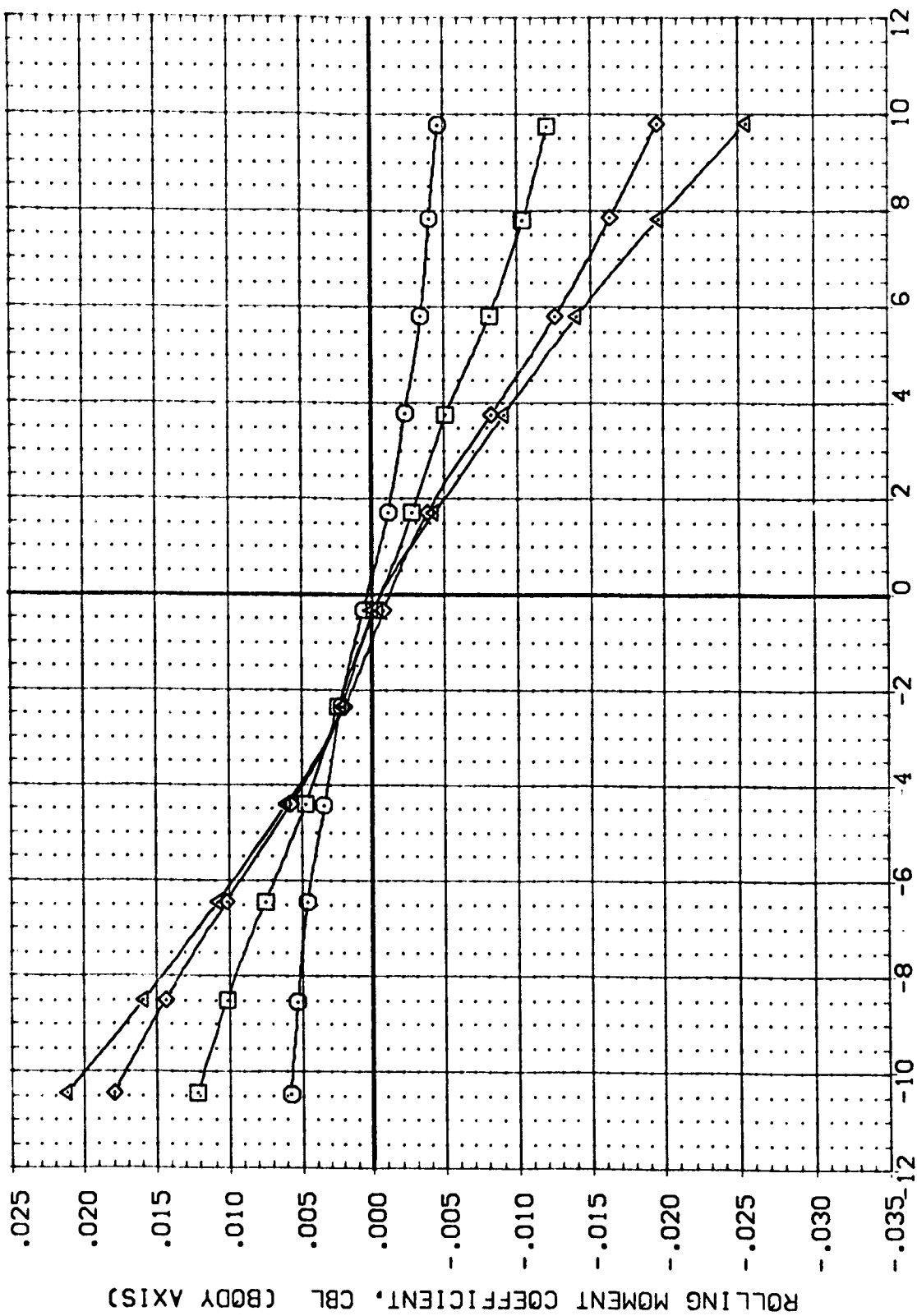


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(O)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEV	SPDRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(OA48) CRB 139B V/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(OA48) CRB 139B V/ALT NOISE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(OA48) CRB 139B V/ALT NOISE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(OA48) CRB 139B V/ALT NOISE	30.000	.000	999.990	.000	YMRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040



SIDESLIP ANGLE, BETA, DEGREES

FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	SQ.FT.
(A87033)	MSFC 574(OA48) ORB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(A87034)	MSFC 574(OA48) ORB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF	474.8000
(A87035)	MSFC 574(OA48) ORB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF	936.7000
(A87036)	MSFC 574(OA48) ORB 139B V/ALT NOSE	30.000	.000	999.990	.000	XMRP	838.7000
(A87037)	MSFC 574(OA48) ORB 139B V/ALT NOSE	40.000	.000	999.990	.000	YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

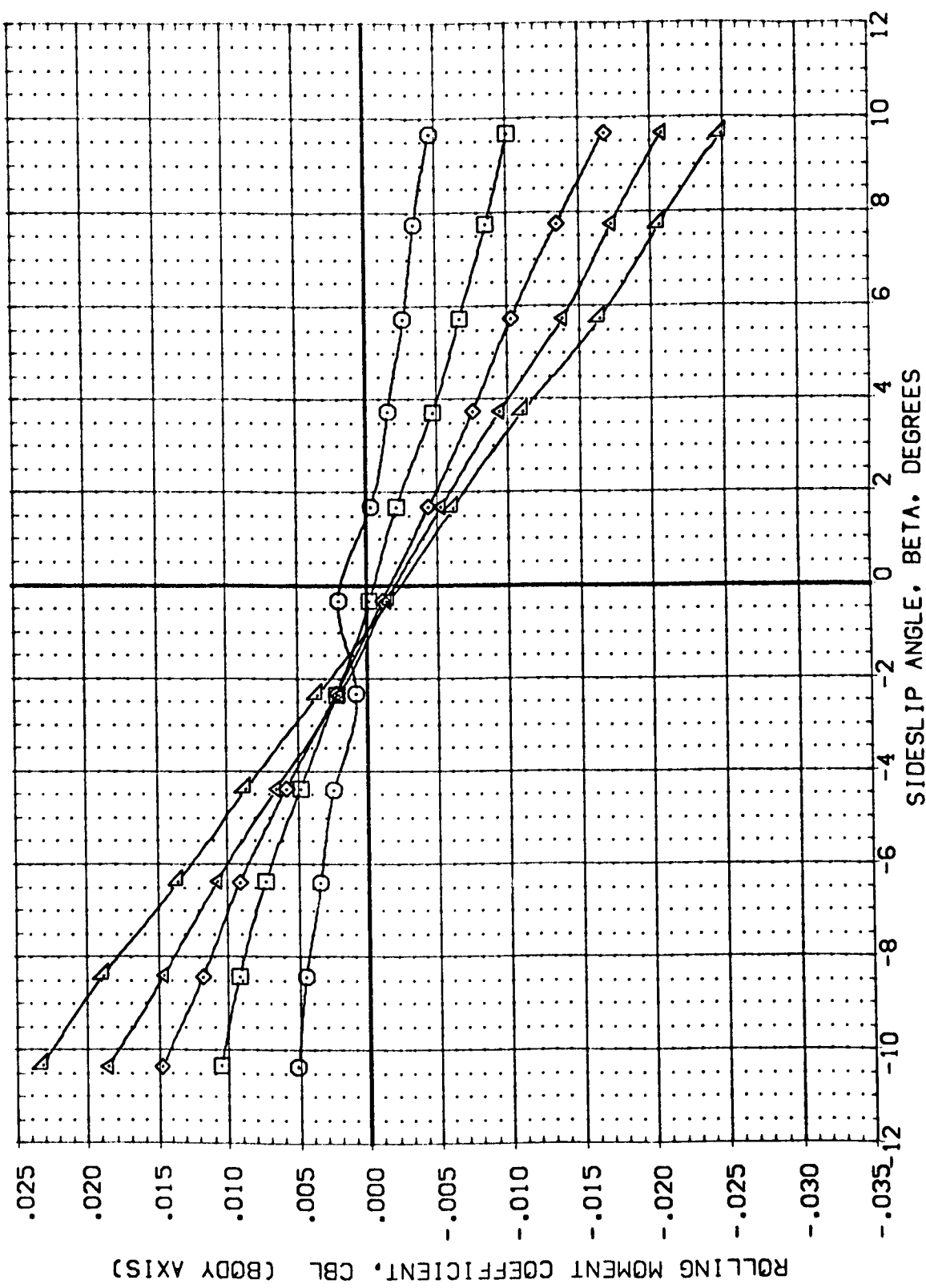


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{A87051}	MSFC 574 (0A48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87052}	MSFC 574 (0A48) CRB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87053}	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000 IN.
{A87054}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
{A87055}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

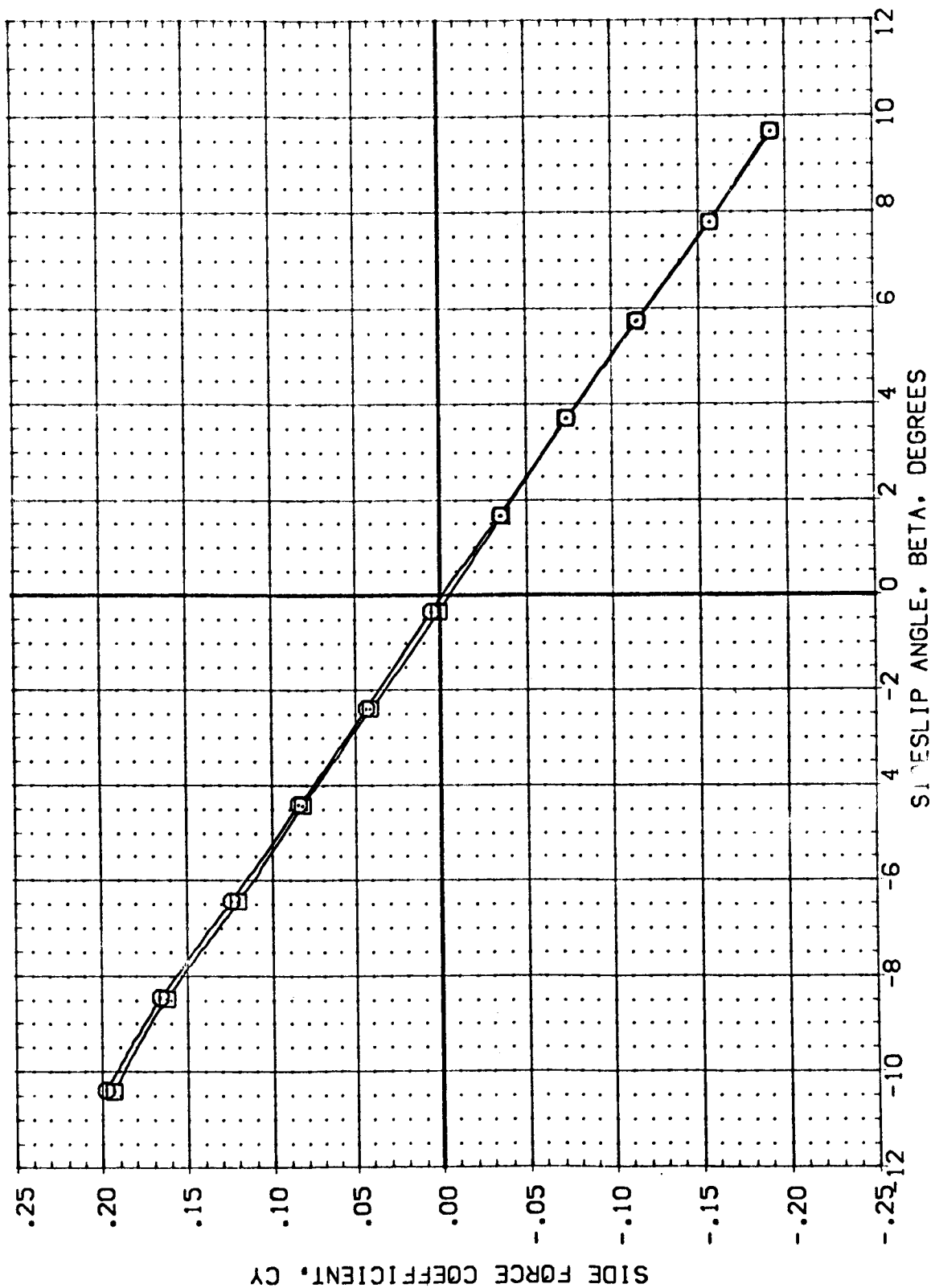


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(CA48) CR8 139	.000	.000	999.990	.000	SREF 2690.0000
(A87052)	MSFC 574(CA48) CR8 139	10.000	.000	999.990	.000	LREF 474.8000
(A87053)	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

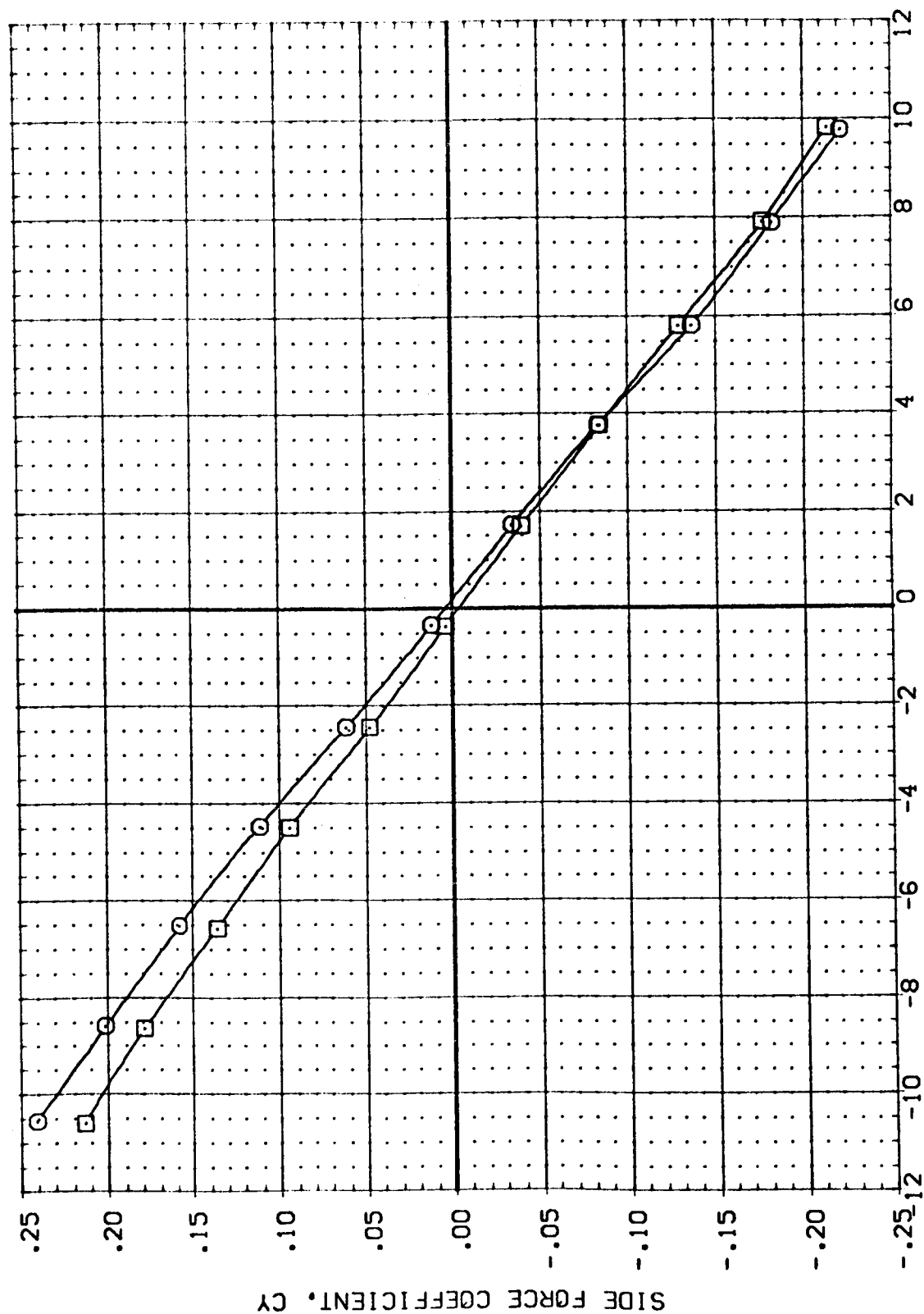


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(CA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87052)	MSFC 574(CA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87053)	MSFC 574(CA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP .0000 IN.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

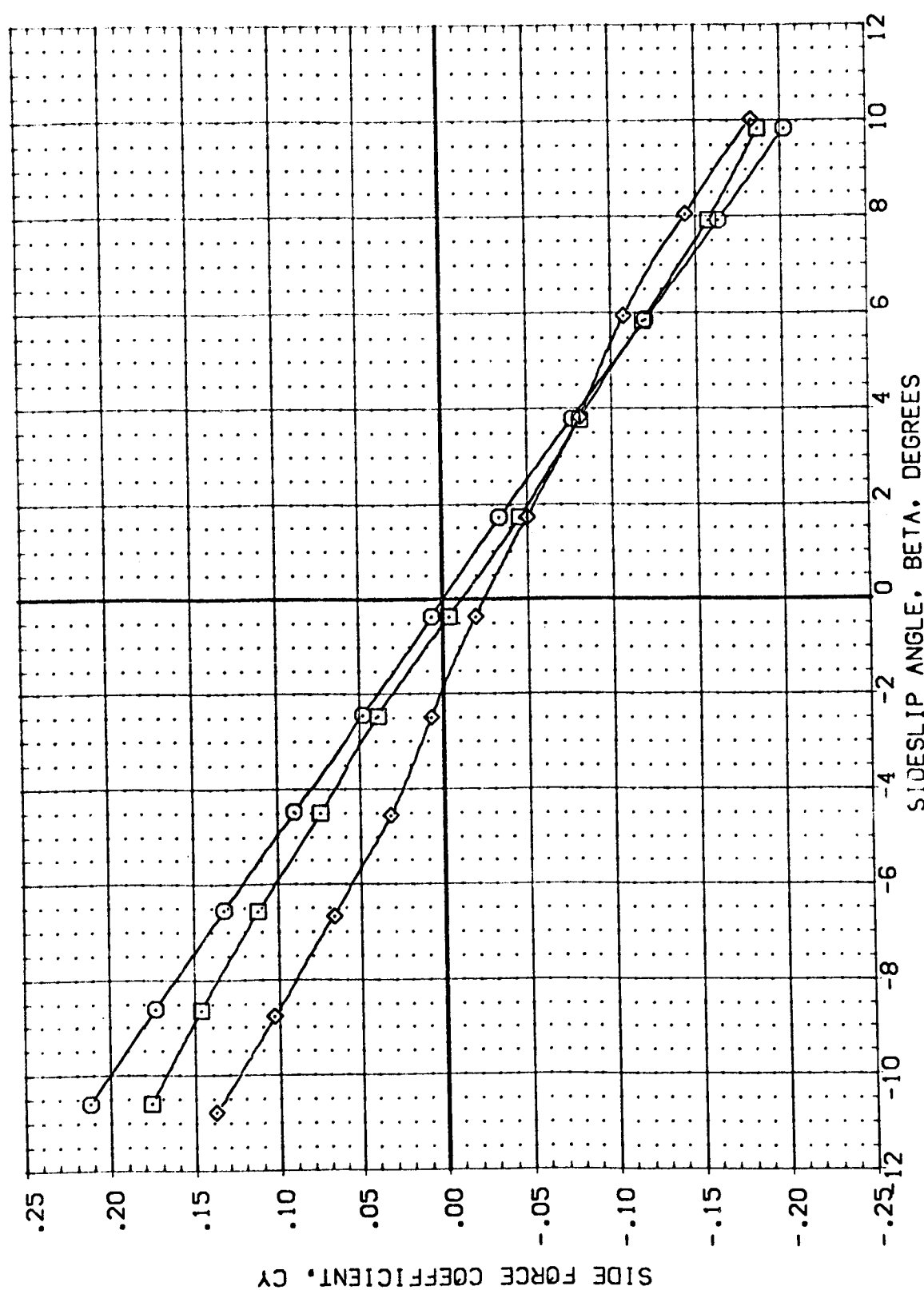


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSFC 574(OA48) ORB 139

(A87052) MSFC 574(OA48) ORB 139

(A87053) MSFC 574(OA48) ORB 139

(A87054) DATA NOT AVAILABLE

(A87055) DATA NOT AVAILABLE

ALPHA ELEVTR SP08BK BDELAP

.000 .000 999.990 .000

10.000 .000 999.990 .000

20.000 .000 999.990 .000

30.000 .000 999.990 .000

40.000 .000 999.990 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .0040

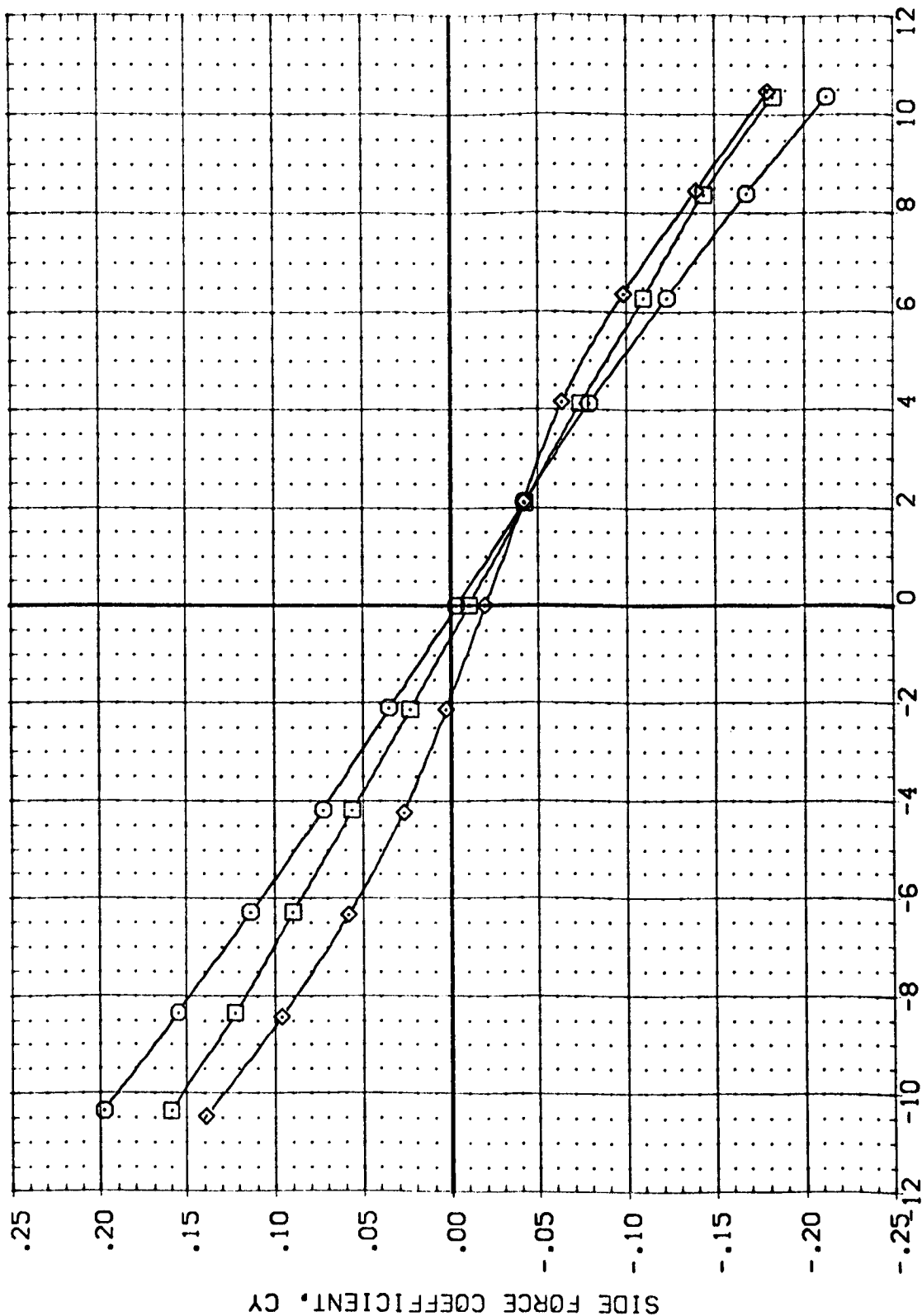
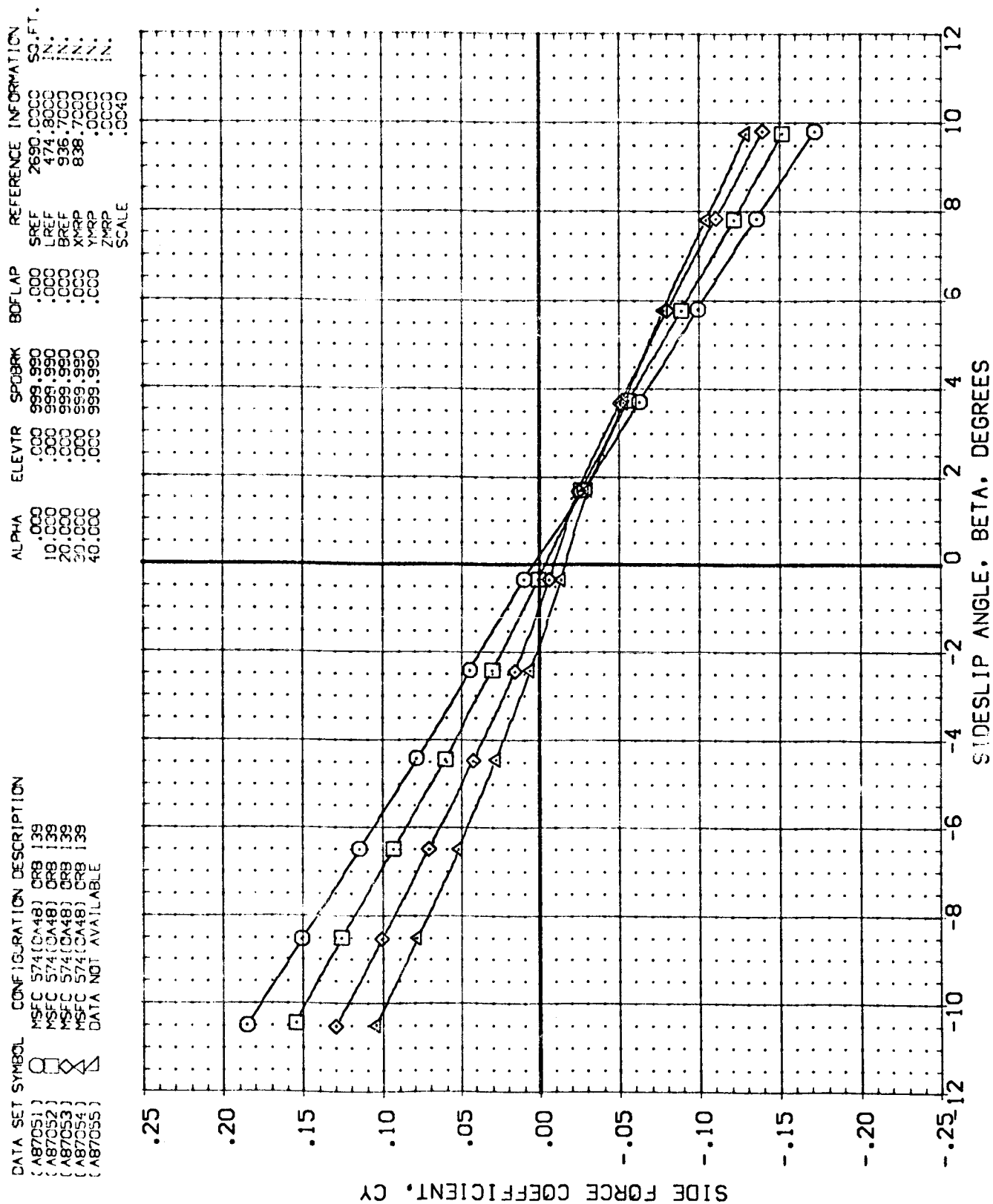


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(C)MACH = 1.95



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFL/P	REFERENCE INFORMATION
(A87051)	MSFC 574(CA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 53.F.T.
(A87052)	MSFC 574(CA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 N.
(A87053)	MSFC 574(CA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 N.
(A87054)	MSFC 574(CA48) ORB 139	30.000	.000	999.990	.000	XREF 838.0000 N.
(A87055)	MSFC 574(CA48) ORB 139	40.000	.000	999.990	.000	YREF .0000 N.
						ZREF .0000 N.
						SCALE .0010

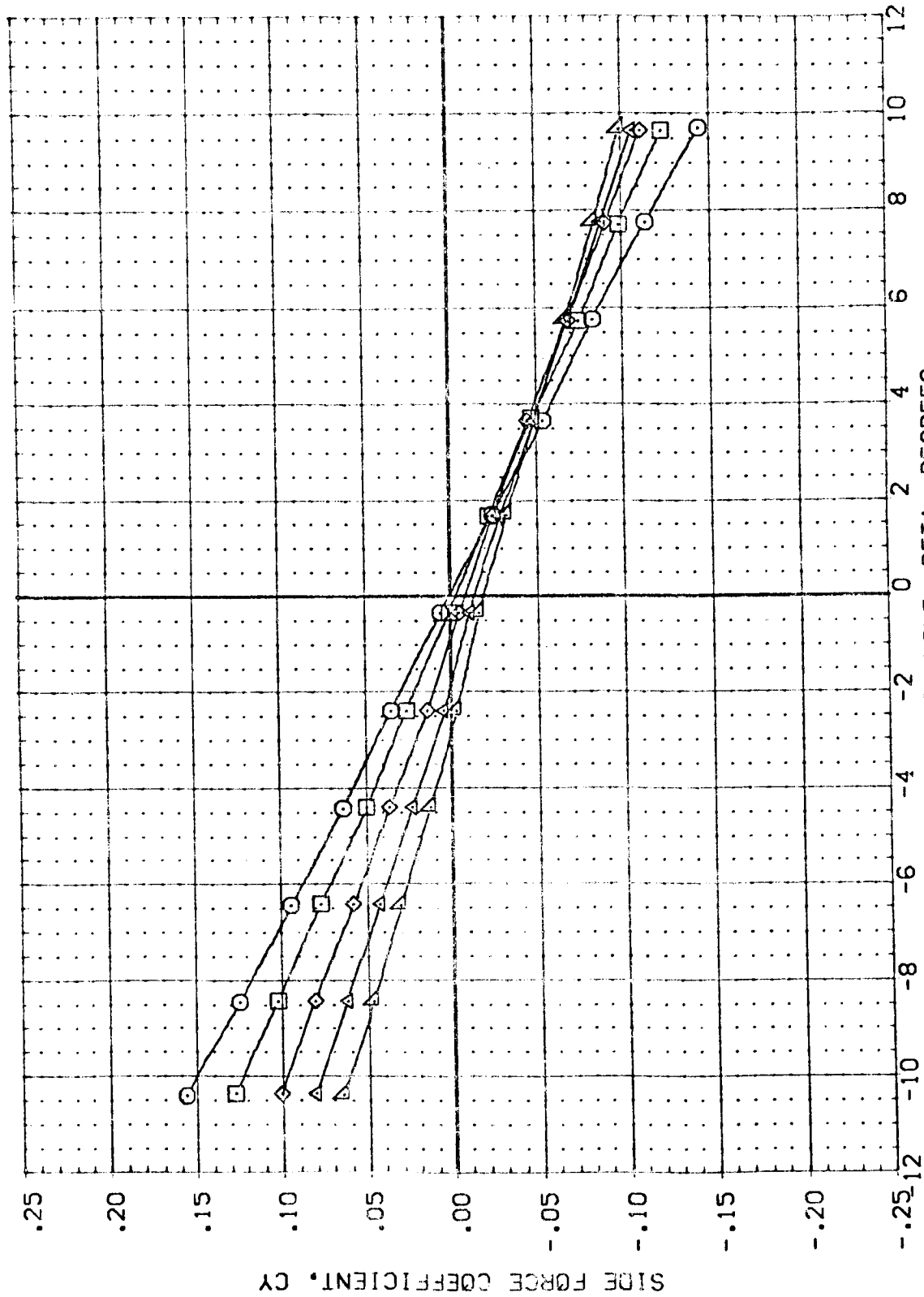


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
[A87051]	MSFC 574(OA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
[A87052]	MSFC 574(OA48) CRB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
[A87053]	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000 IN.
[A87054]	DATA NOT AVAILABLE	30.000	.000	999.990	.000	YMRP 838.7000 IN.
[A87055]	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0010

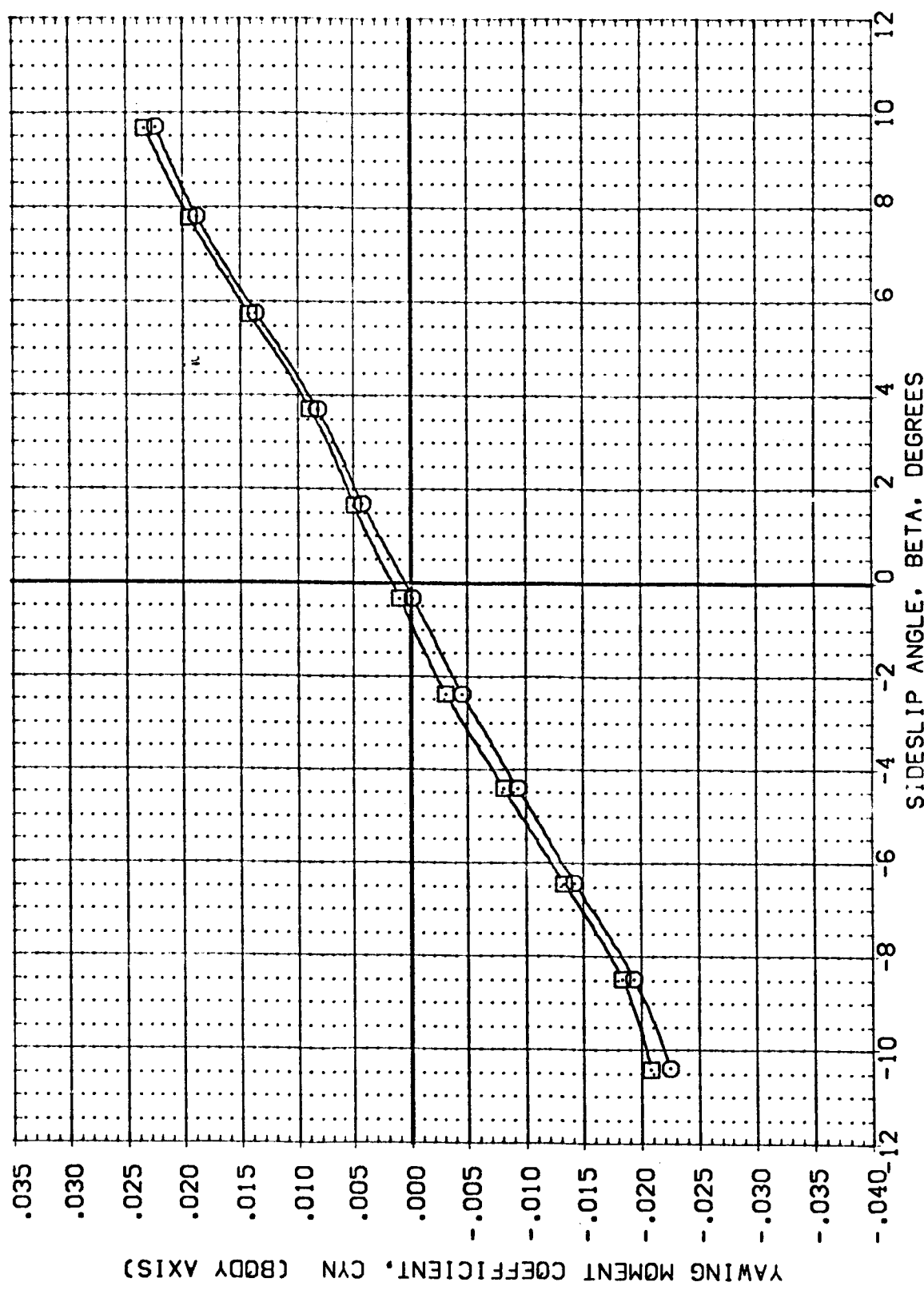


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSFC 574(OA48) ORB 139
 (A87052) MSFC 574(OA48) ORB 139
 (A87053) DATA NOT AVAILABLE
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000
 ELEVTR .000
 .000
 .000
 .000
 .000
 SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 BOCLAP .000
 .000
 .000
 .000
 .000
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BM.F 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

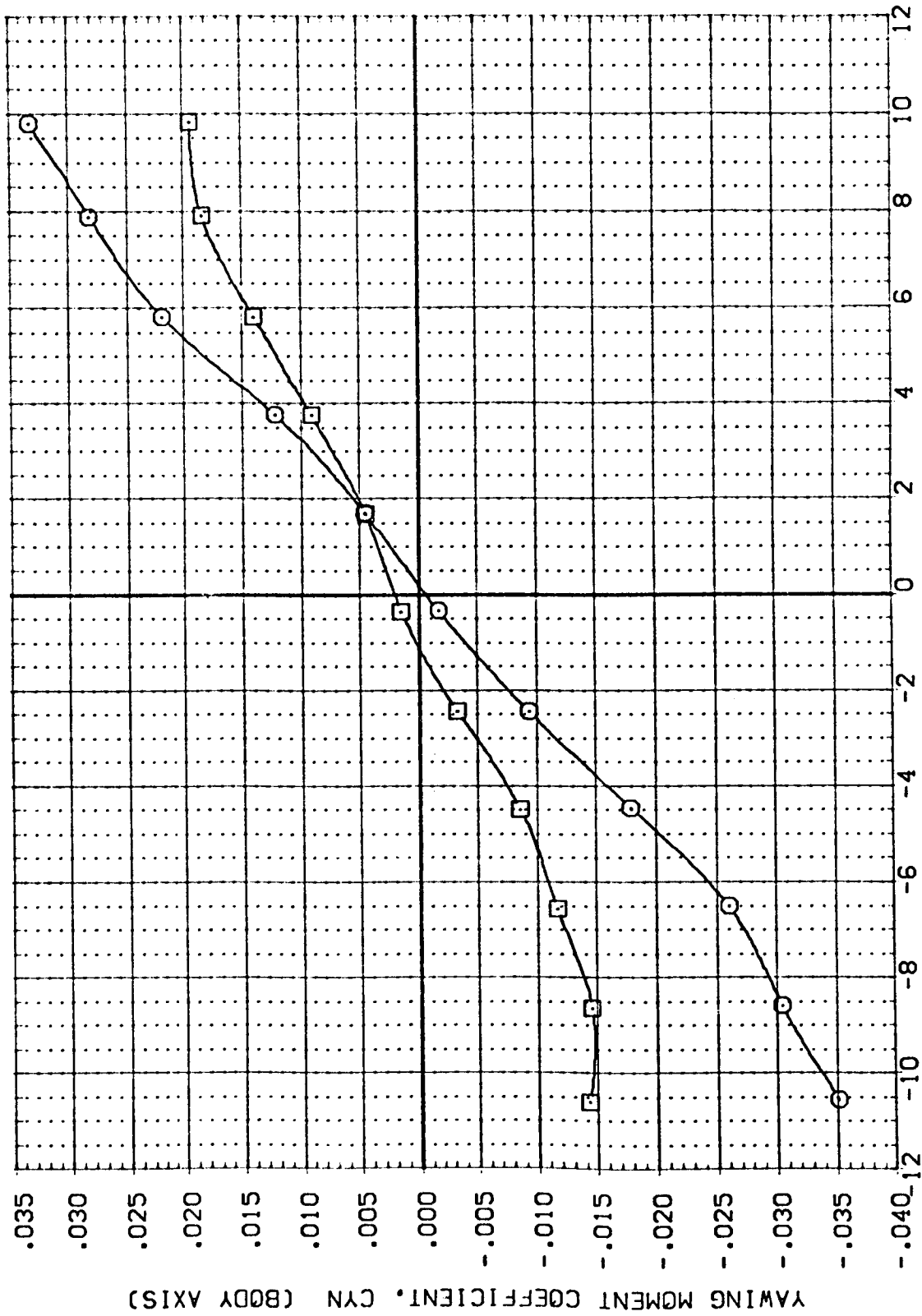


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(CA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87052)	MSFC 574(CA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87053)	MSFC 574(CA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

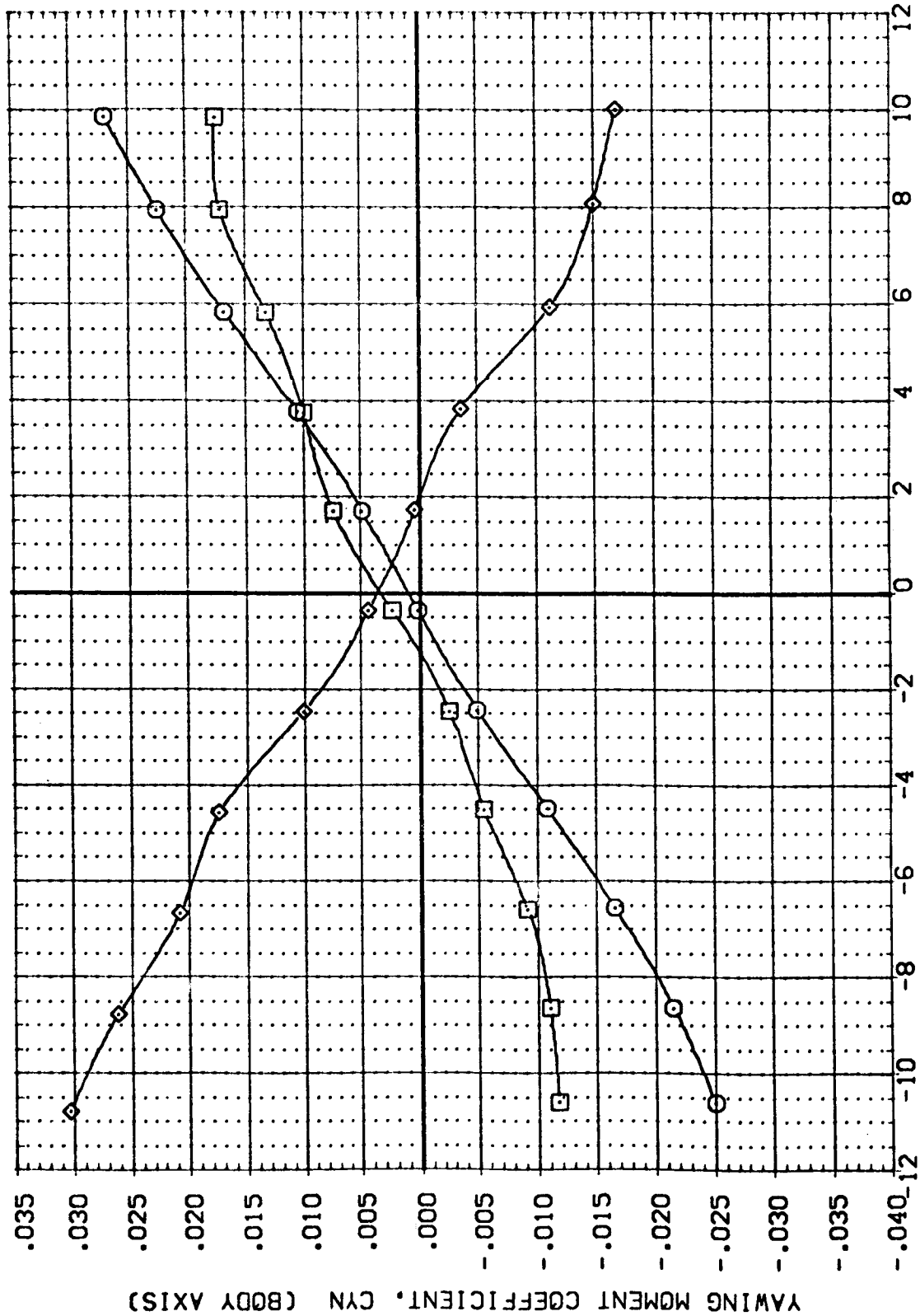


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(CA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000
(A87052)	MSFC 574(CA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000
(A87053)	MSFC 574(CA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

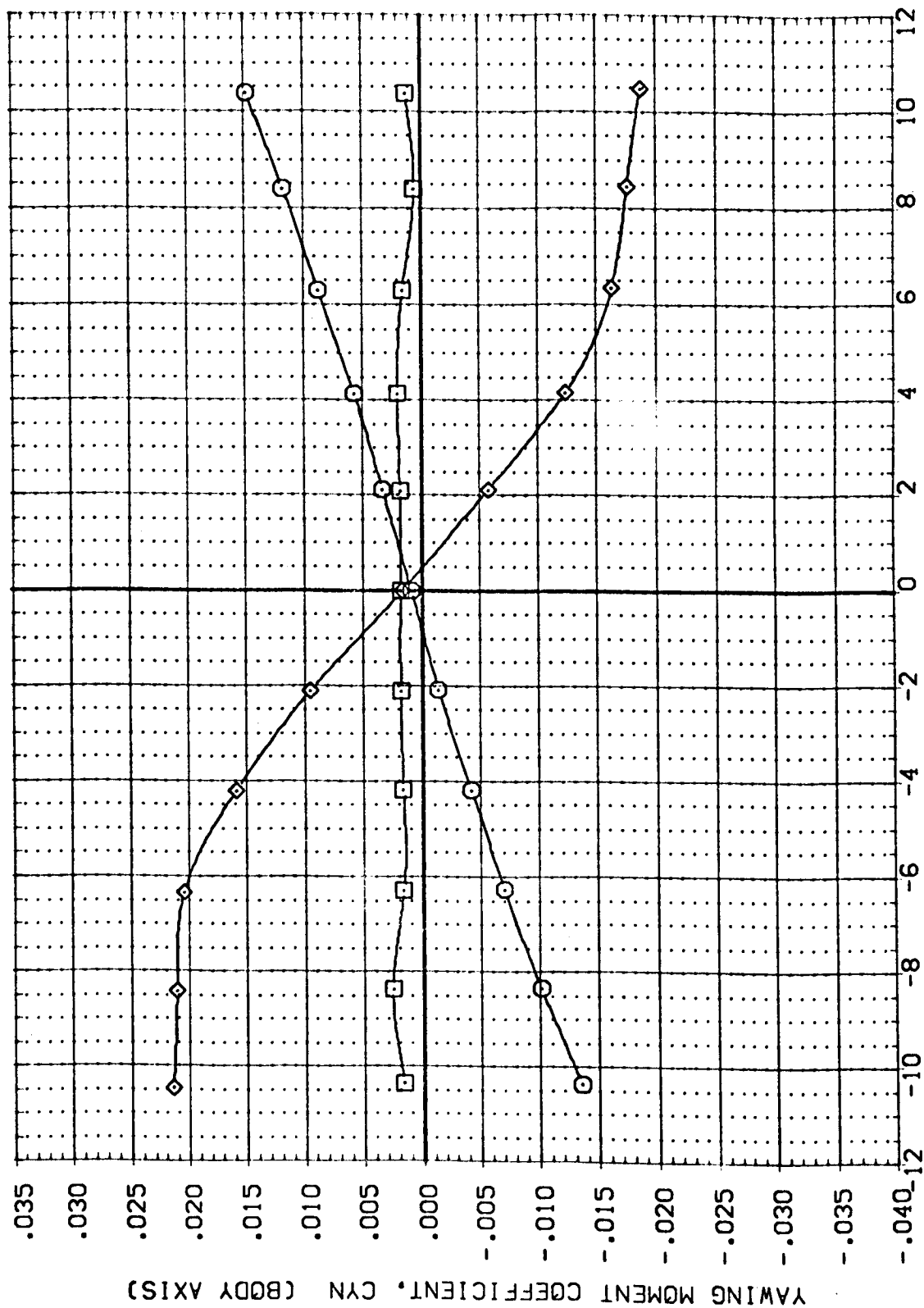


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(D)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(OA18) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87052)	MSFC 574(OA18) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87053)	MSFC 574(OA18) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87054)	MSFC 574(OA18) ORB 139	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

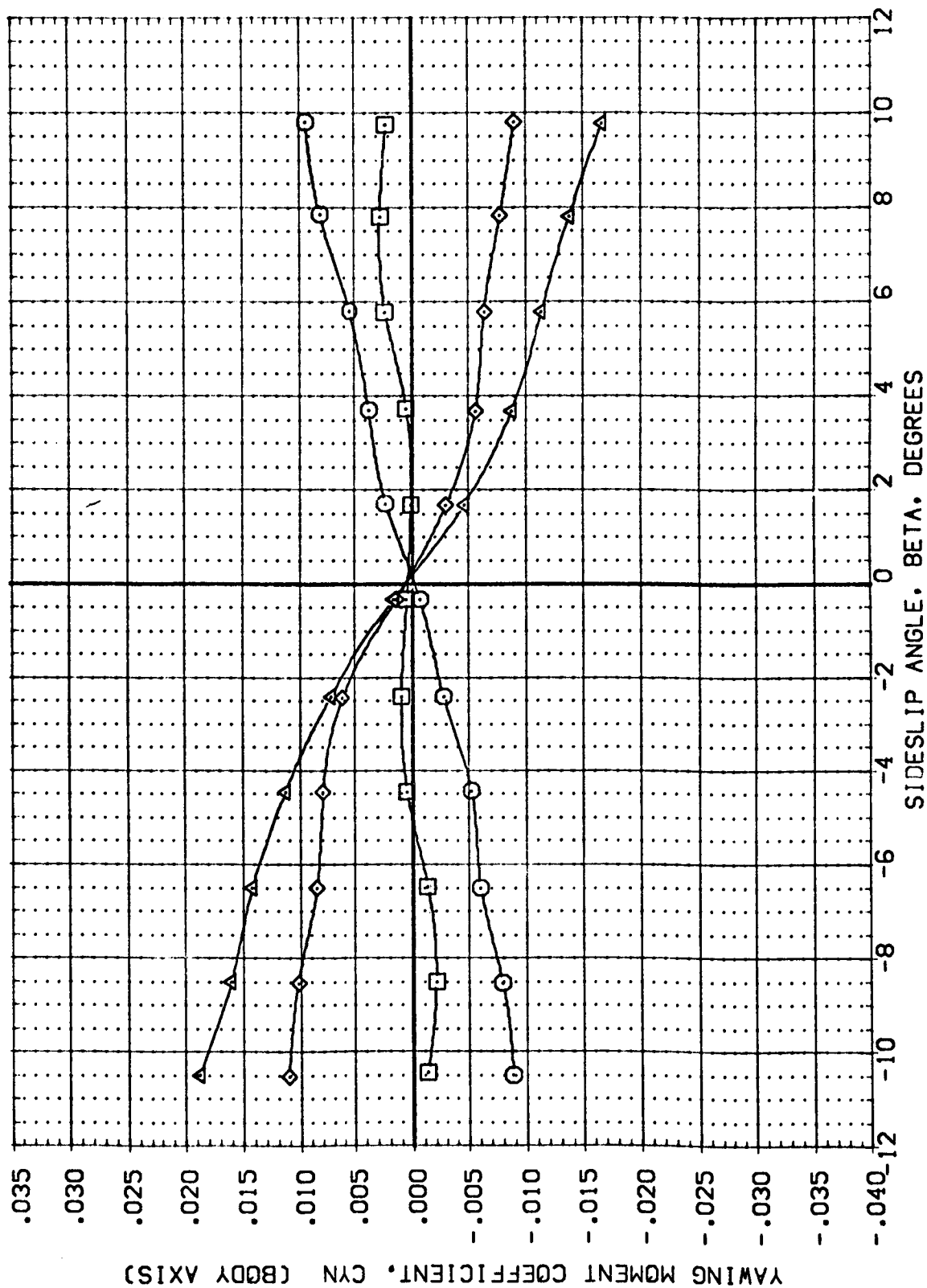


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(OA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87052)	MSFC 574(OA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87053)	MSFC 574(OA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87054)	MSFC 574(OA48) ORB 139	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87055)	MSFC 574(OA48) ORB 139	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

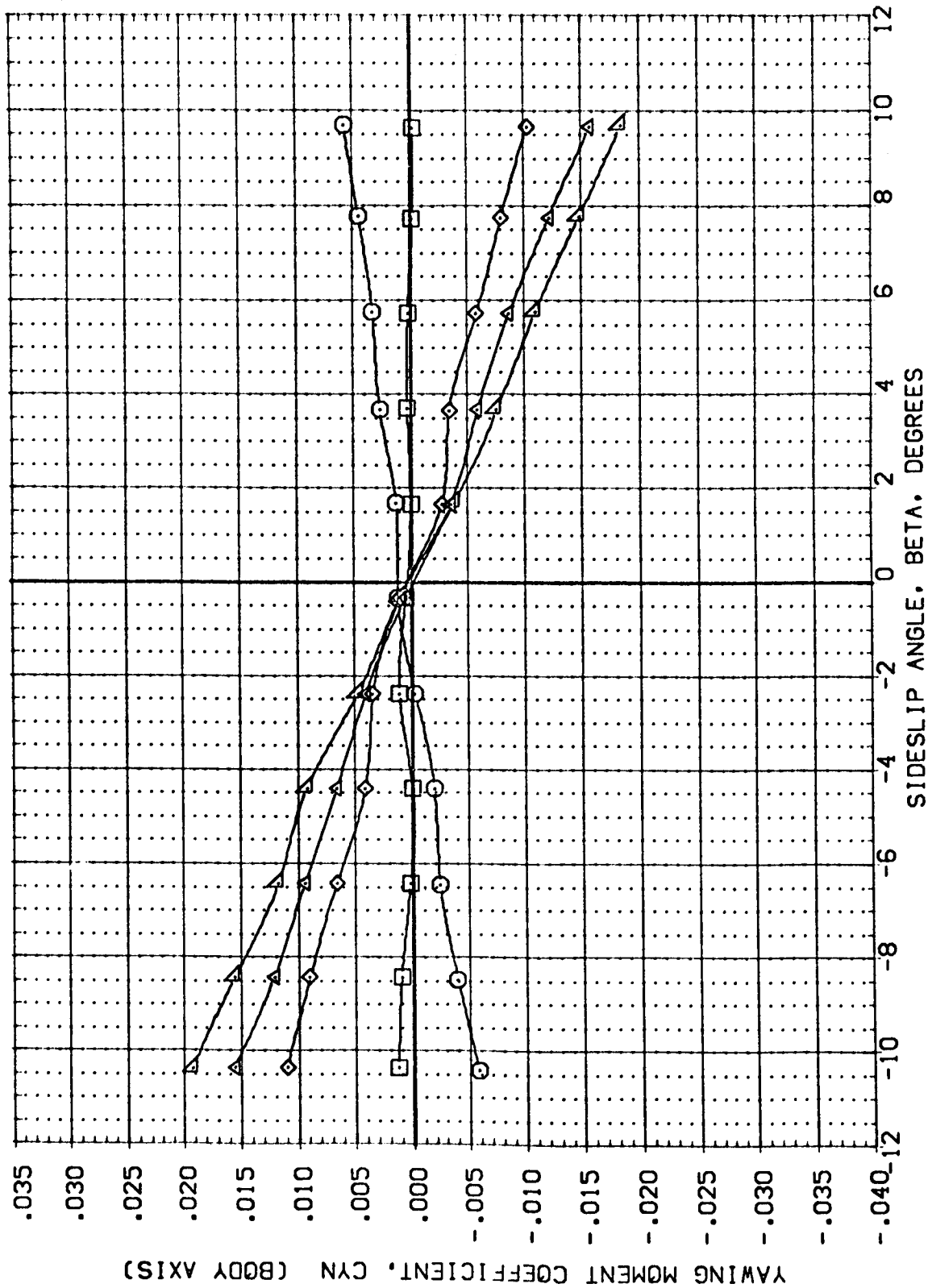


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION	SO.FT.
(A87051)	MSFC 574(0A48) CRB 139	.000	.000	999.990	.000	SREF	2690.0000
(A87052)	MSFC 574(0A48) CRB 139	10.000	.000	999.990	.000	LREF	474.8000
(A87053)	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF	936.7000
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP	838.7000
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

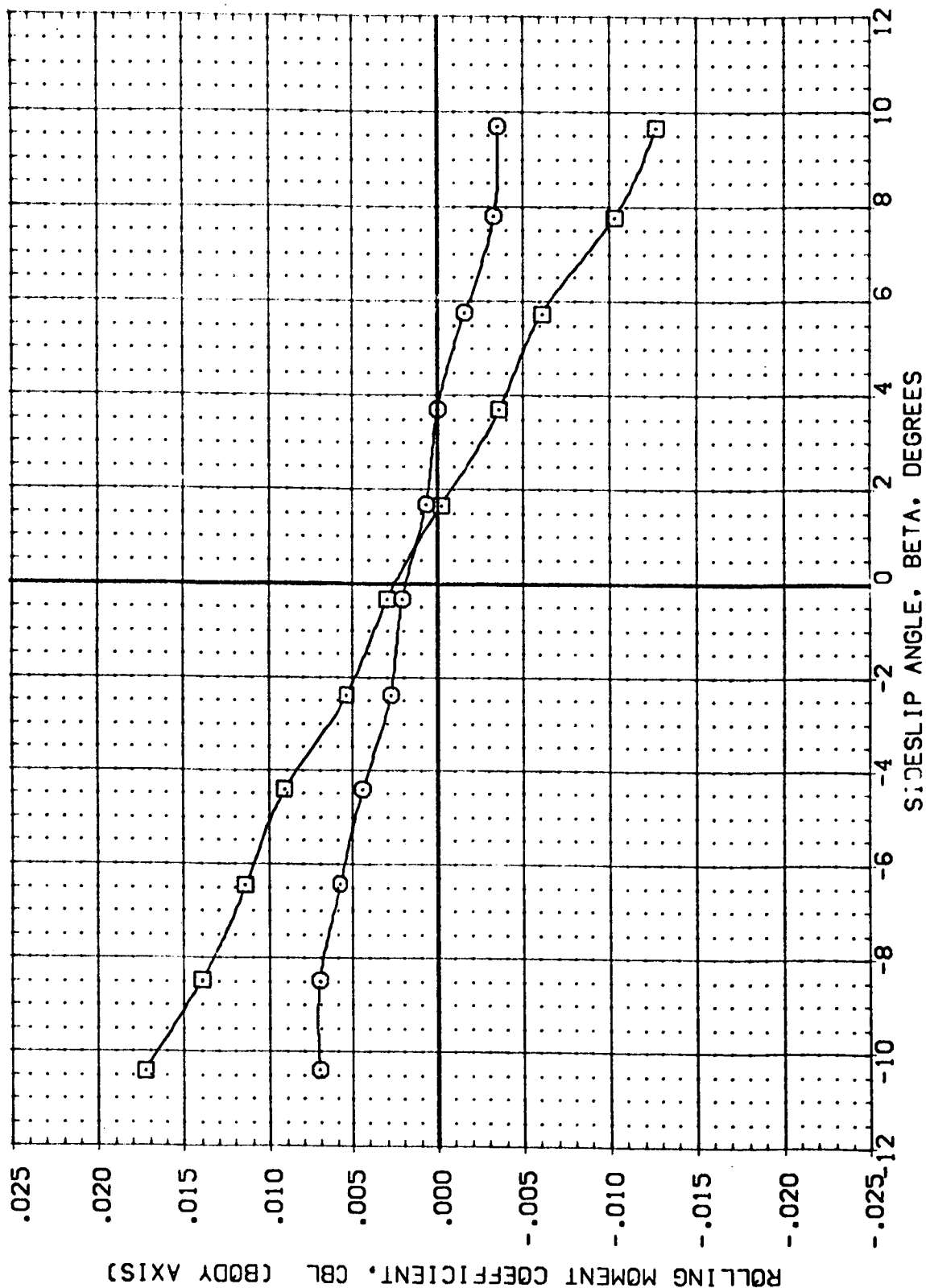


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPO3BK	BOFLAP	REFERENCE INFORMATION
{A87051}	MSFC 574(OA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
{A87052}	MSFC 574(OA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87053}	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000 IN.
{A87054}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	YMRP 838.7000 IN.
{A87055}	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

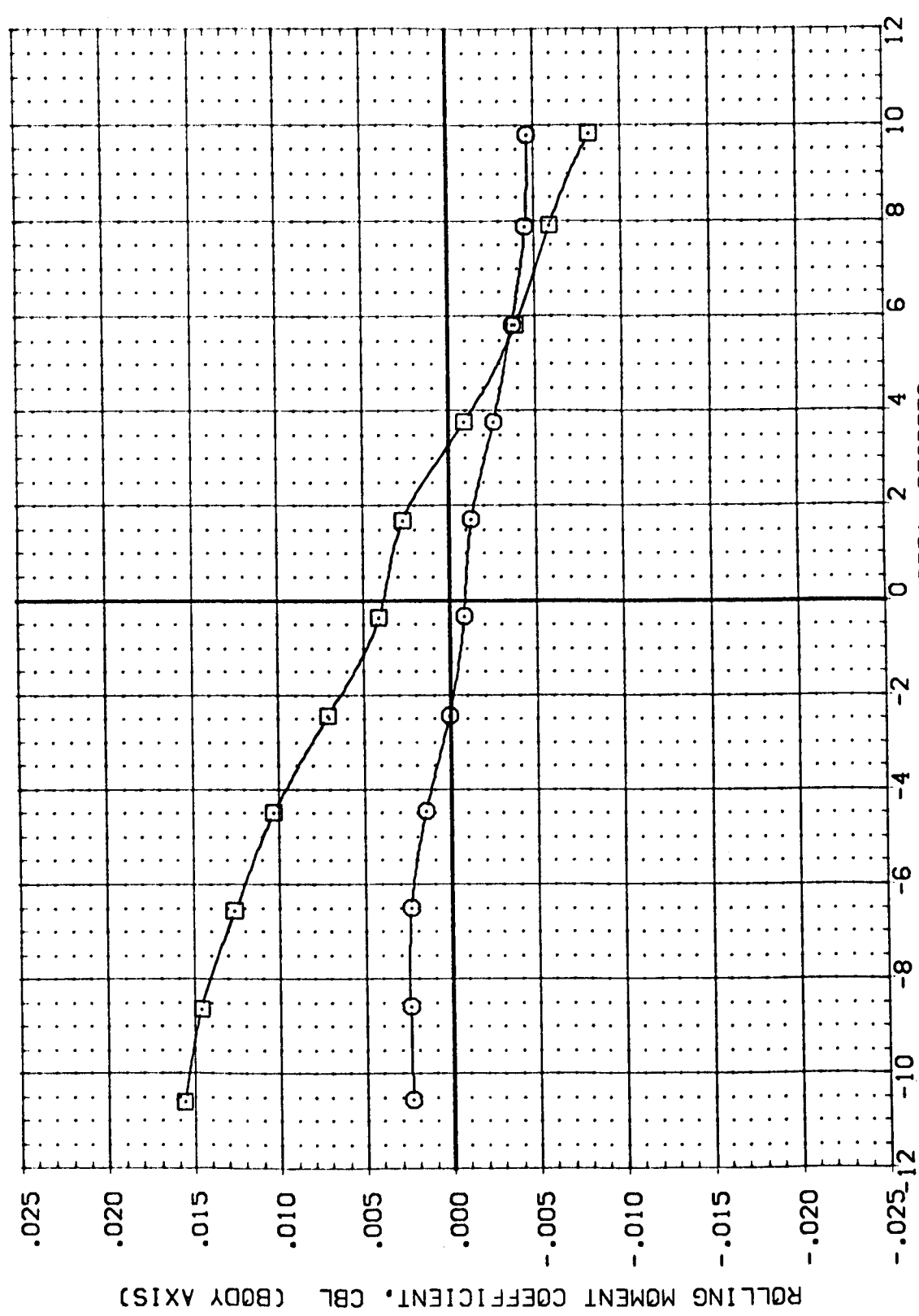


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(OA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000
(A87052)	MSFC 574(OA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000
(A87053)	MSFC 574(OA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

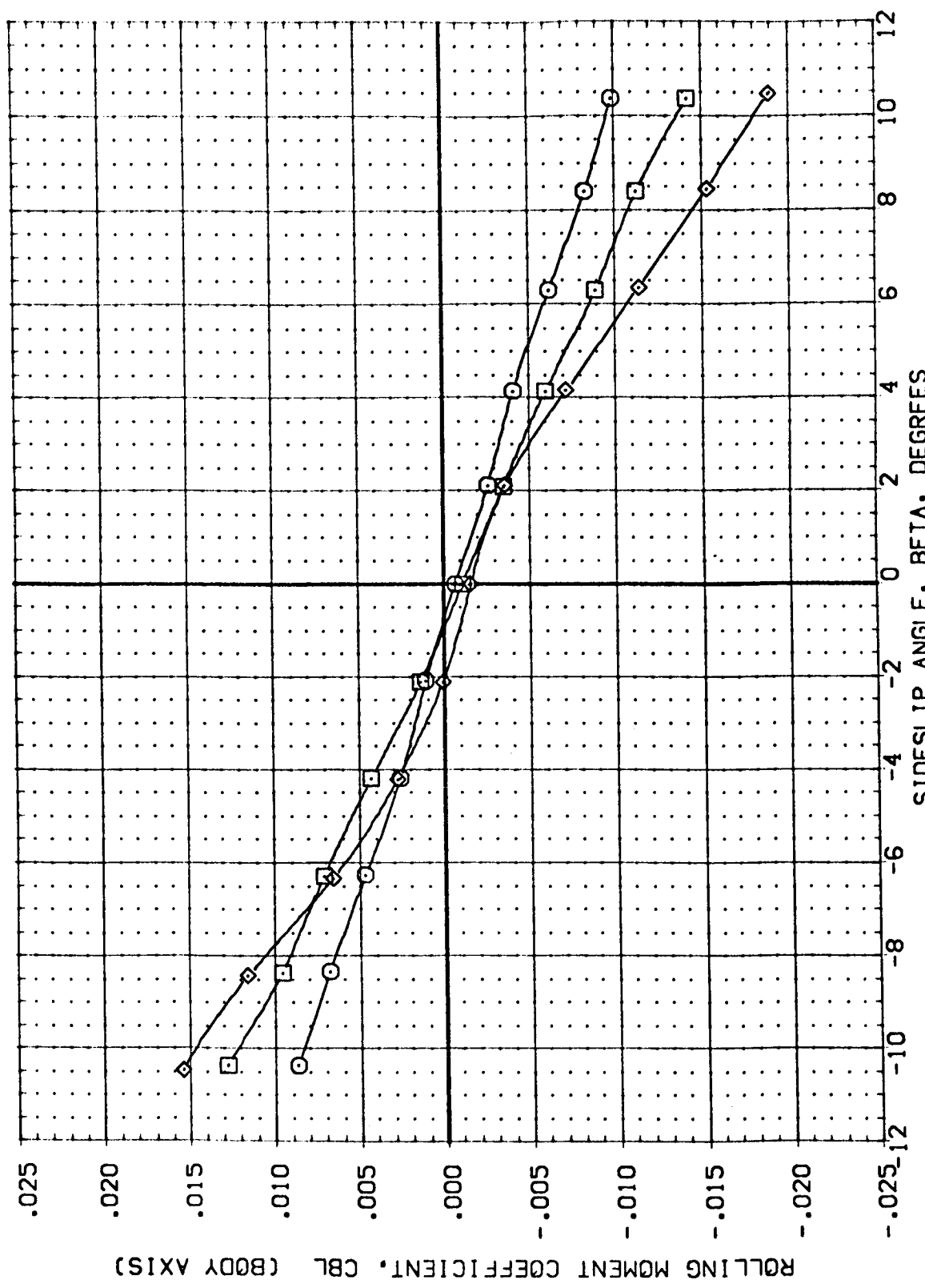


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

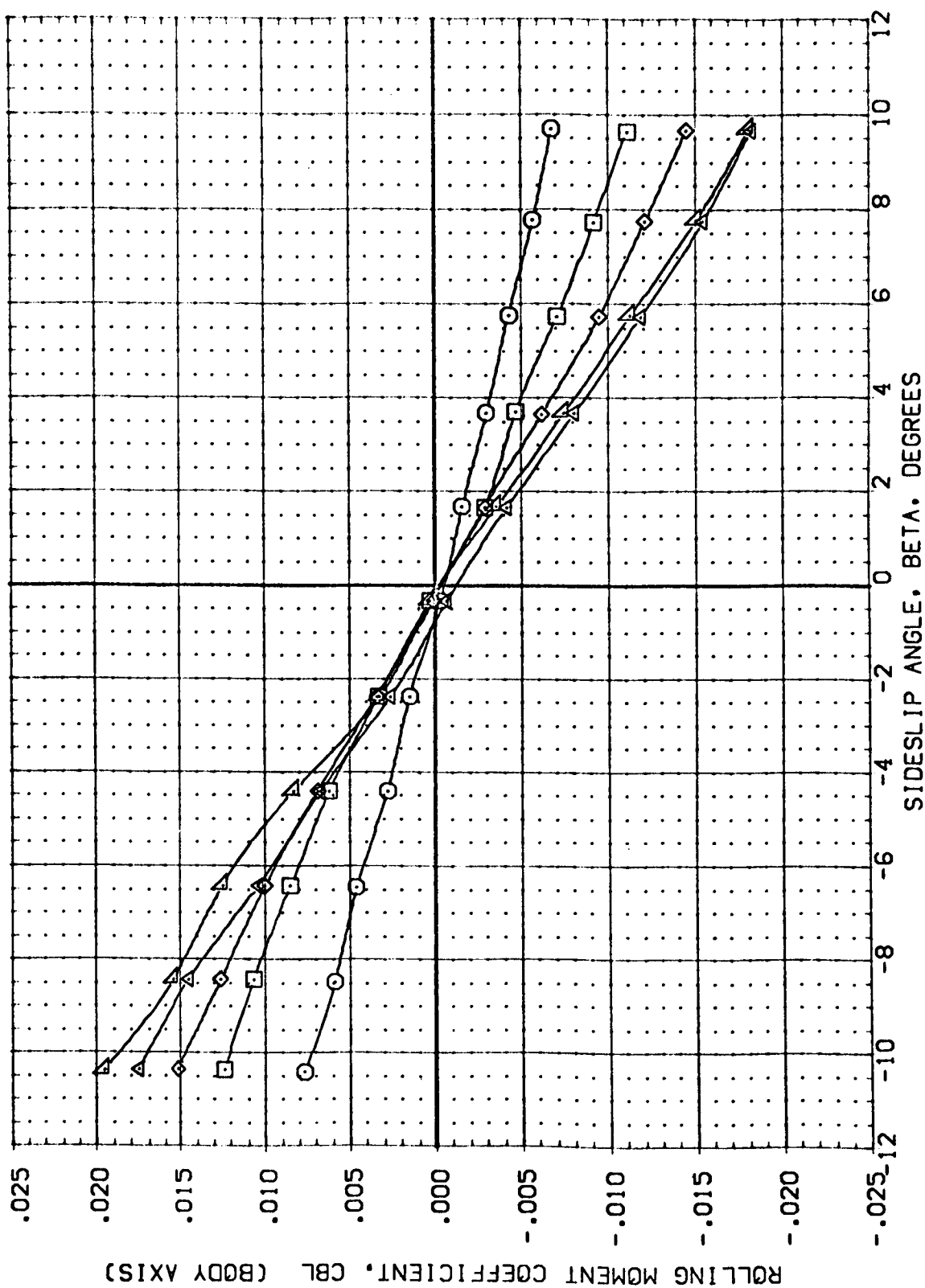
(A87051)	MSC 574(CA48)	CRB 139
(A87052)	MSC 574(CA48)	CRB 139
(A87053)	MSC 574(CA48)	CRB 139
(A87054)	MSC 574(CA48)	CRB 139
(A87055)	MSC 574(CA48)	CRB 139

ALPHA ELEVTR SPOBRK BOFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

REFERENCE INFORMATION

SREF	2690.0000	SG.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.0000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87058)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87059)	MSFC 574(CA48) ORB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(CA48) ORB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 935.7000 IN.
(A87071)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

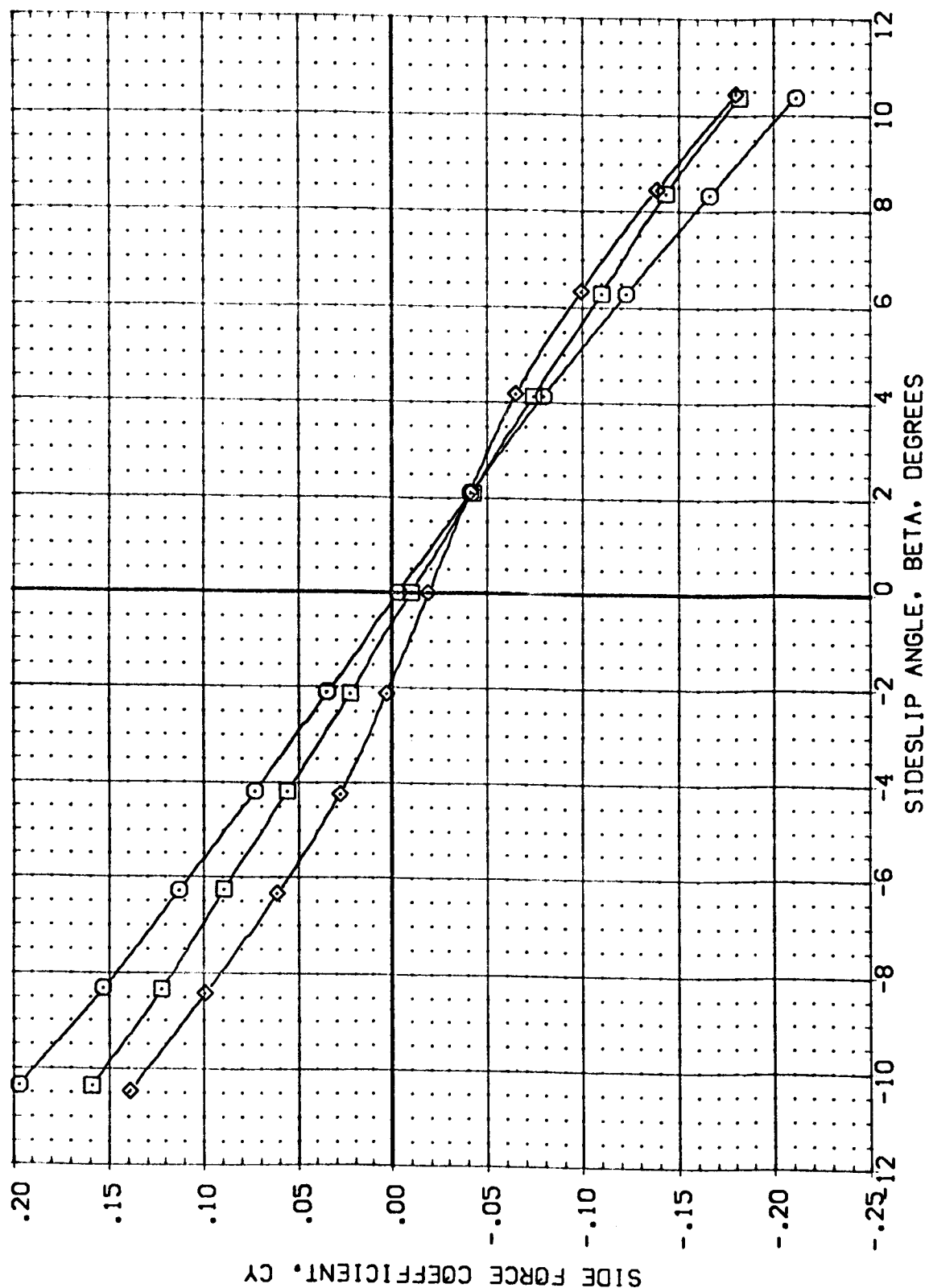


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87058)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 53.171
(A87059)	MSFC 574(CA48) CRB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 11.1
(A87070)	MSFC 574(CA48) CRB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 11.1
(A87071)	MSFC 574(CA48) CRB 139 W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 11.1
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 11.1
						ZMRP .0000 11.1
						SCALE .0040

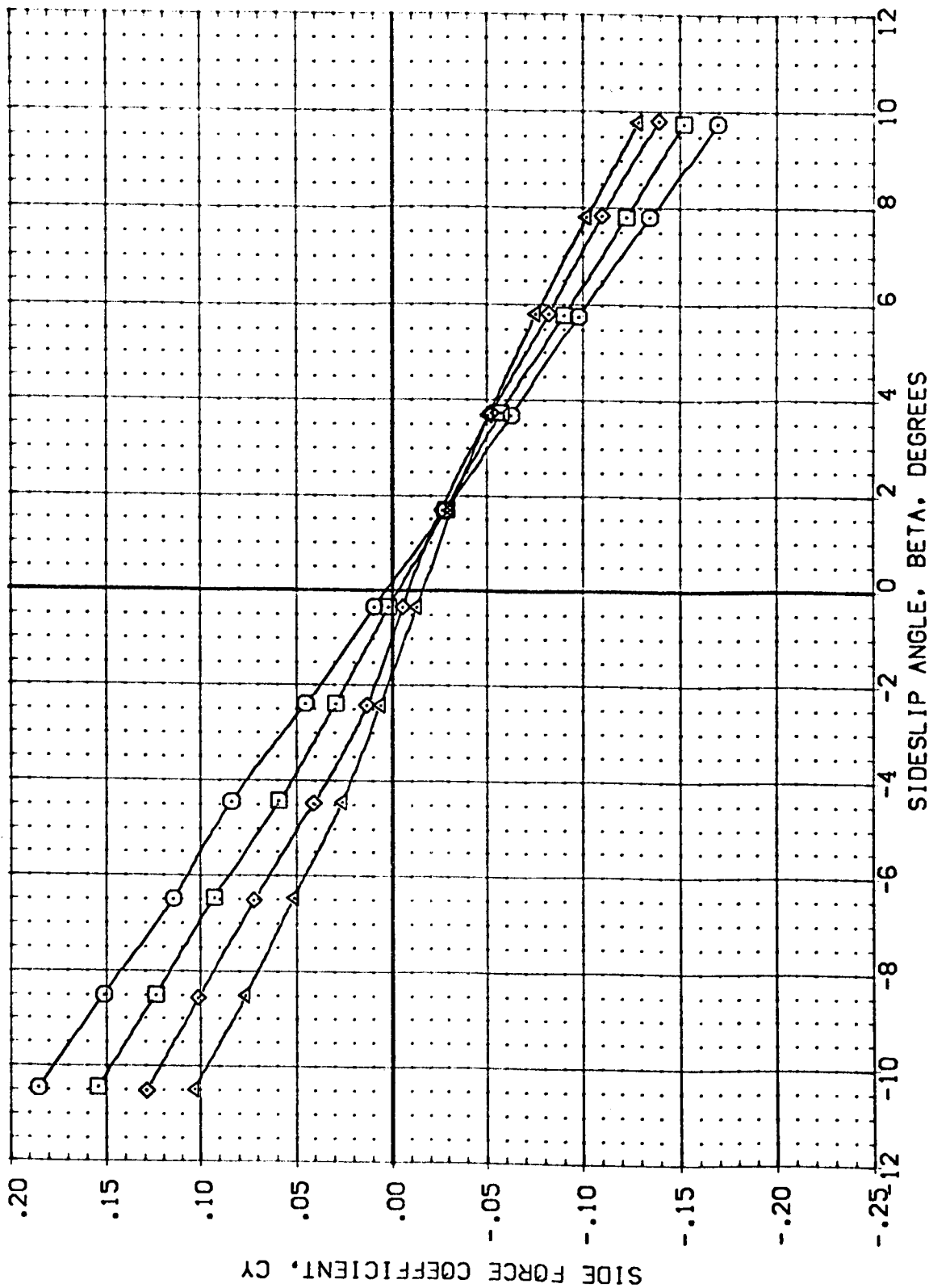


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(B)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
MSFC 574(OA48)	ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SG.FT.
MSFC 574(OA48)	ORB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
MSFC 574(OA48)	ORB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
MSFC 574(OA48)	ORB 139 V/ALT NOSE	30.000	.000	999.990	.000	X-PRP 838.7000 IN.
MSFC 574(OA48)	ORB 139 V/ALT NOSE	40.000	.000	999.990	.000	Y-PRP .0000 IN.
						Z-PRP .0000 IN.
						SCALE .0040

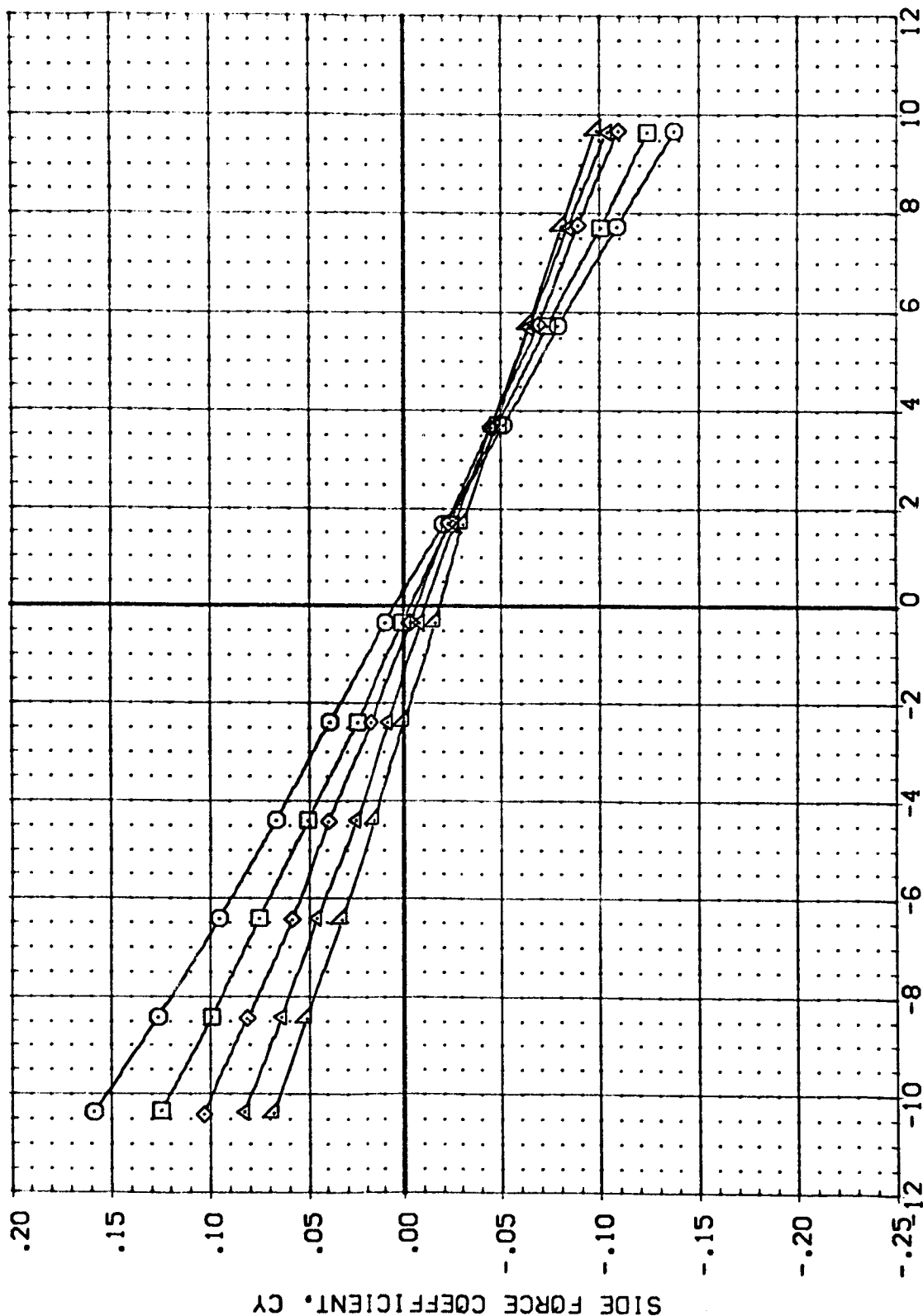


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

COACH = 4.96

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87058)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87059)	MSFC 574(OA48) ORB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87070)	MSFC 574(OA48) ORB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87071)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

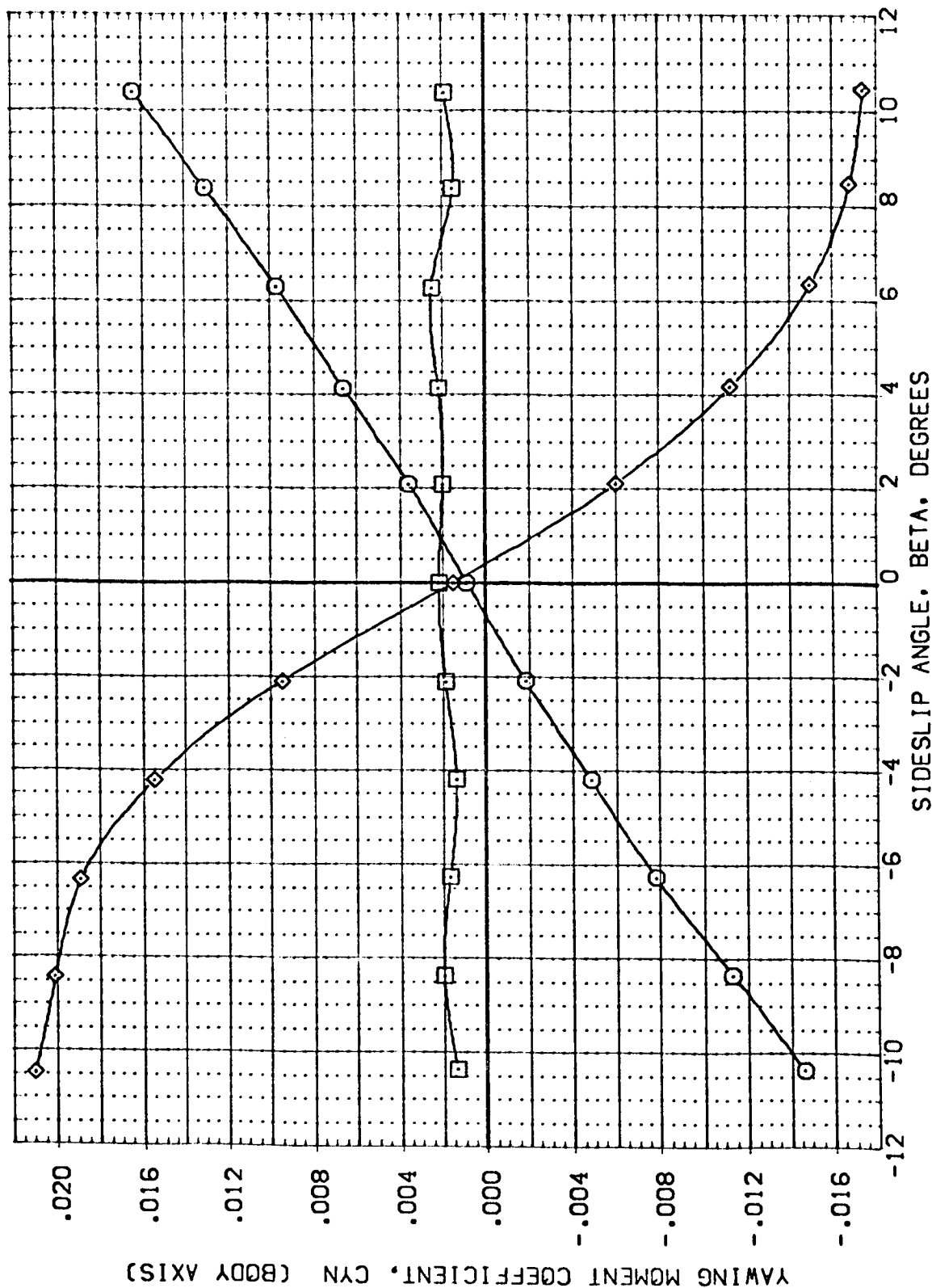


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(A)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(OA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) CRB 139 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0010

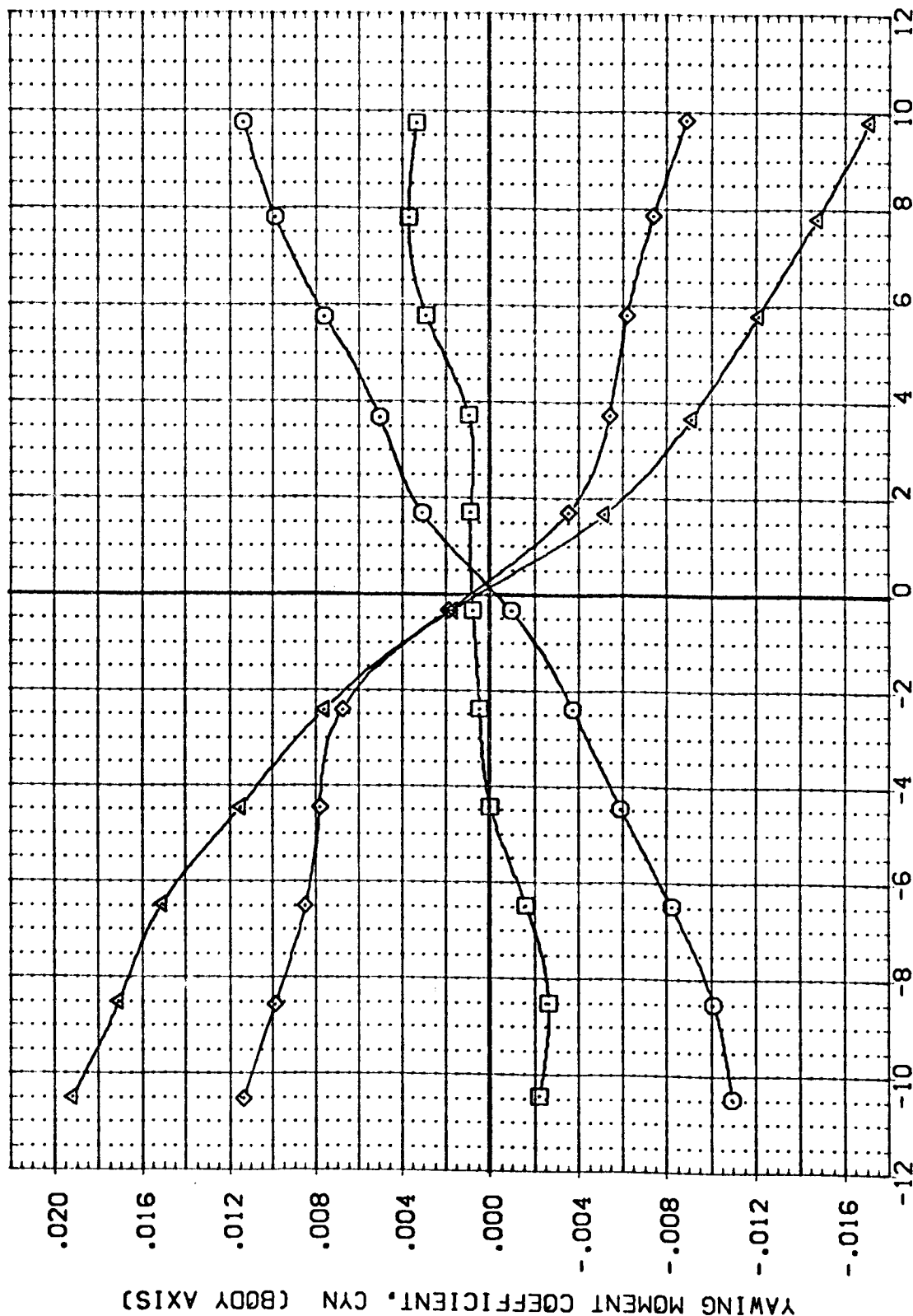


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(B)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87069)	MSFC 574(CA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87070)	MSFC 574(CA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87071)	MSFC 574(CA48) CRB 139 V/ALT NOSE	30.000	.000	999.990	.000	YMRP 838.7000
(A87072)	MSFC 574(CA48) CRB 139 V/ALT NOSE	40.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

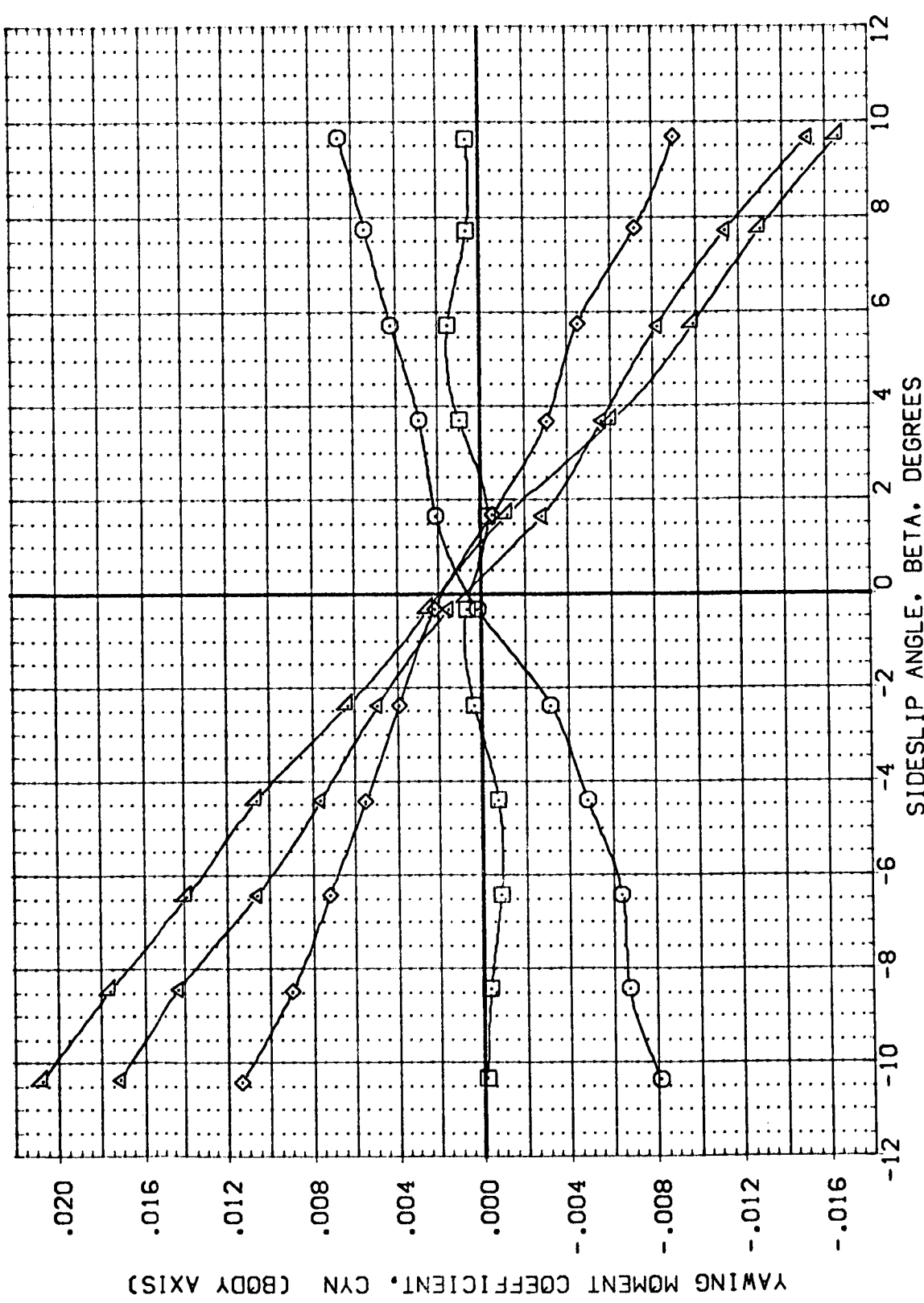


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE
 (C)MACH = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87069)	MSFC 574(CA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(CA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

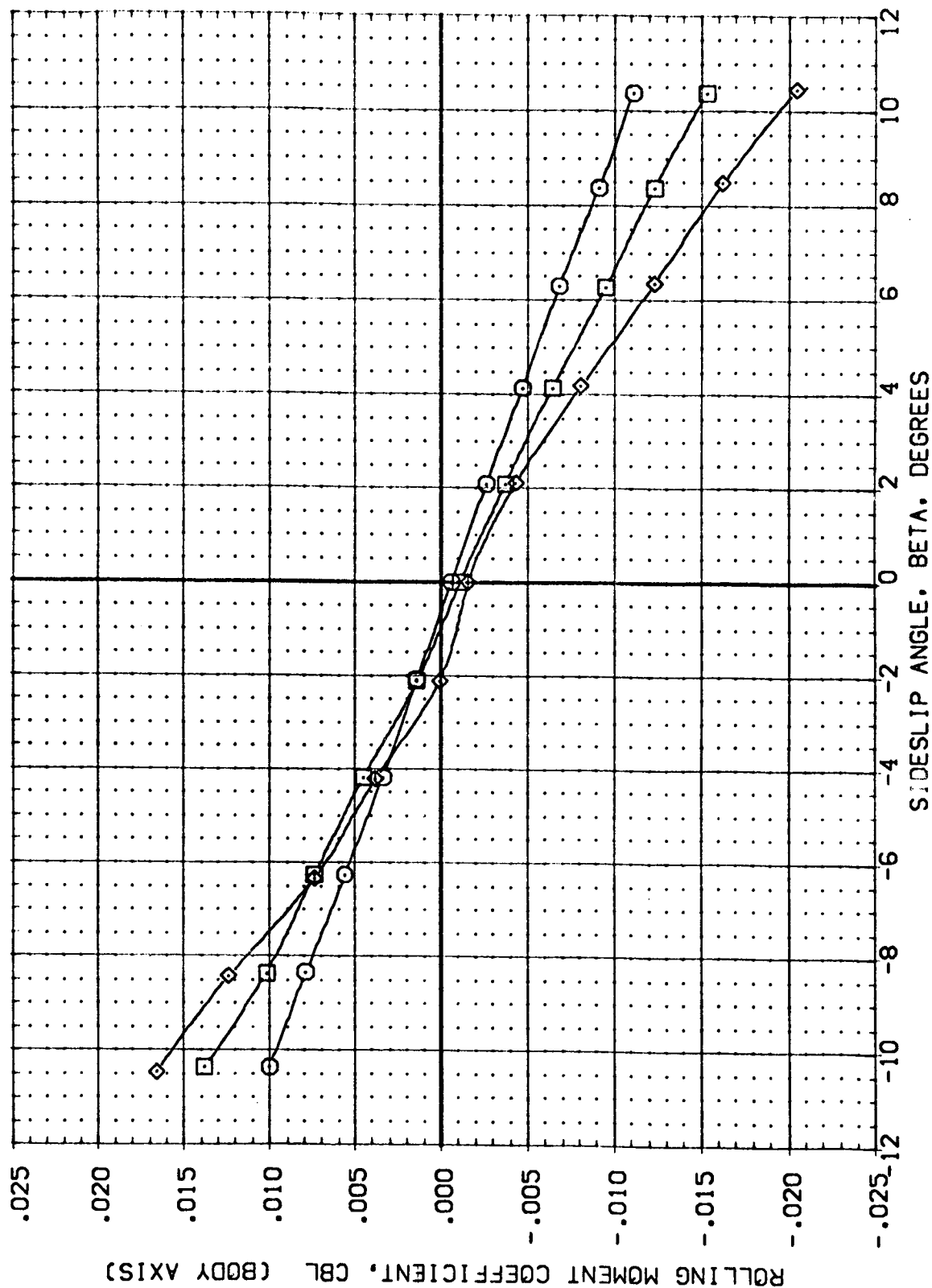


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(A87058)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87059)	MSFC 574(OA48) ORB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) ORB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) ORB 139 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

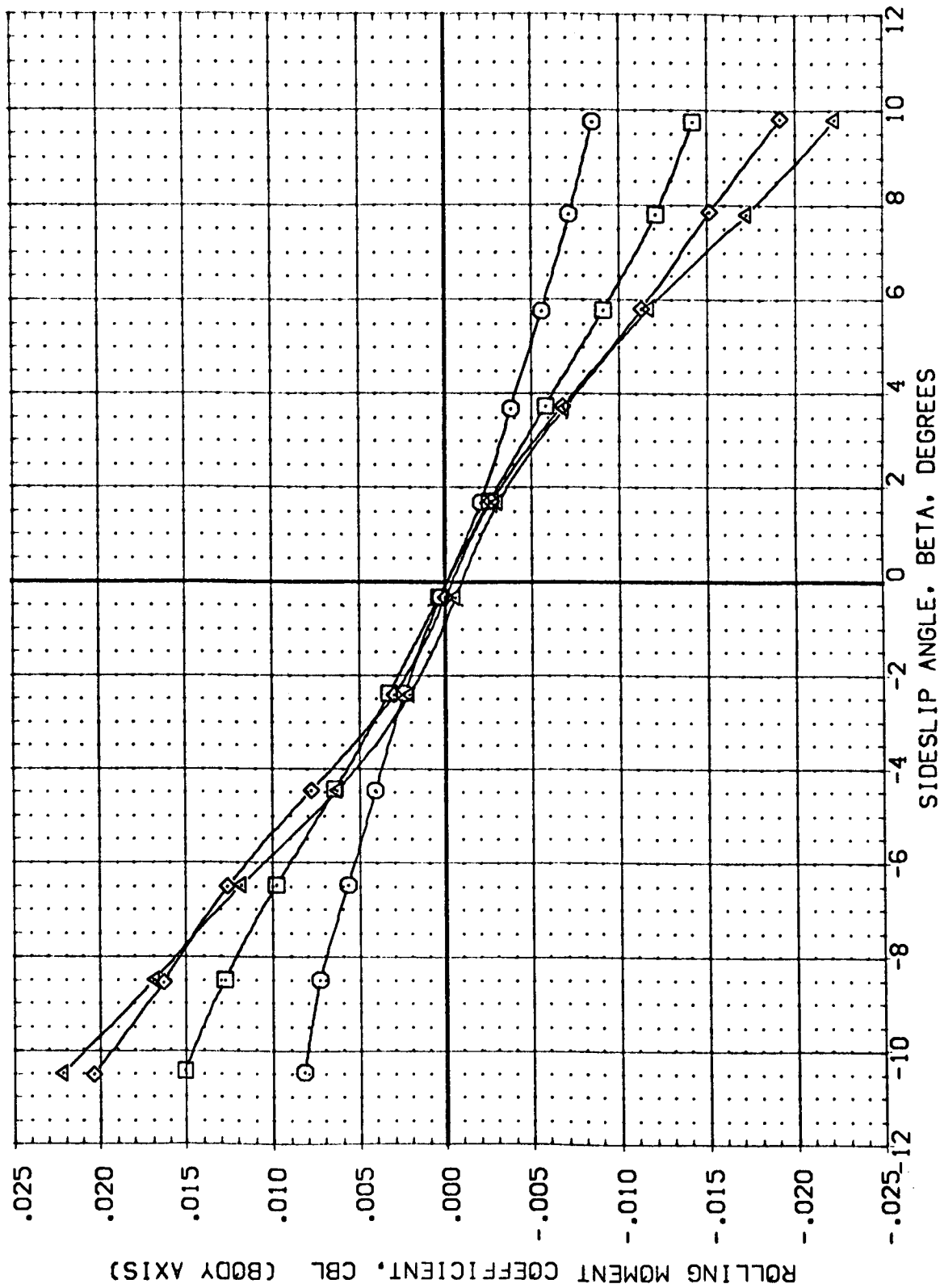


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(B)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(DA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(DA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(DA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(DA48) CRB 139 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	MSFC 574(DA48) CRB 139 V/ALT NOSE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

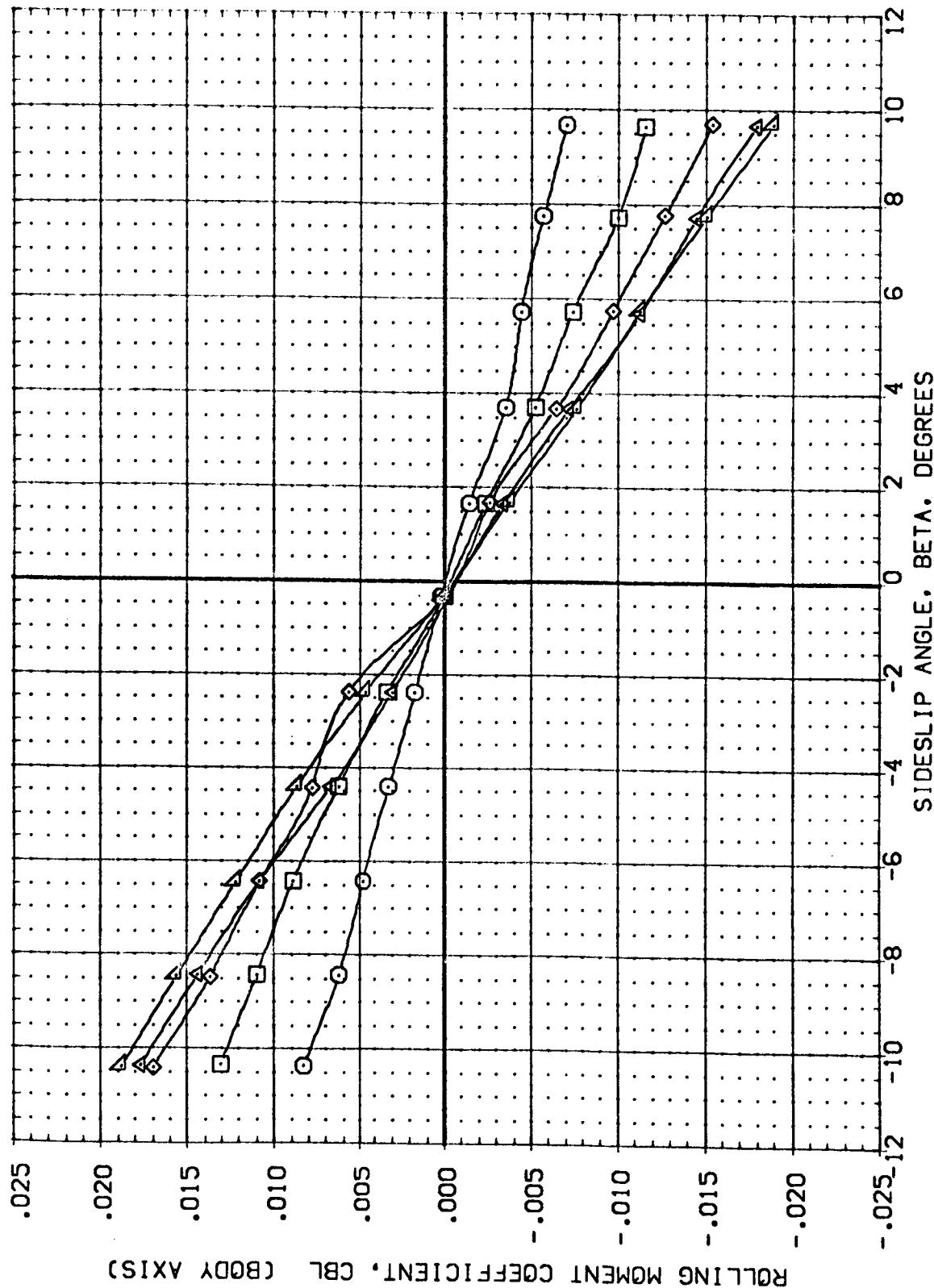


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(C)MACH = 4.96

ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE	INFORMATION
0.000	.000	999.990	.000	SREF	2690.0000
0.000	.000	999.990	.000	LREF	474.8000
0.000	.000	999.990	.000	BREF	936.7000
0.000	.000	999.990	.000	XGRP	838.7000
0.000	.000	999.990	.000	YGRP	.0000
0.000	.000	999.990	.000	ZGRP	.0000
				SCALE	.0040

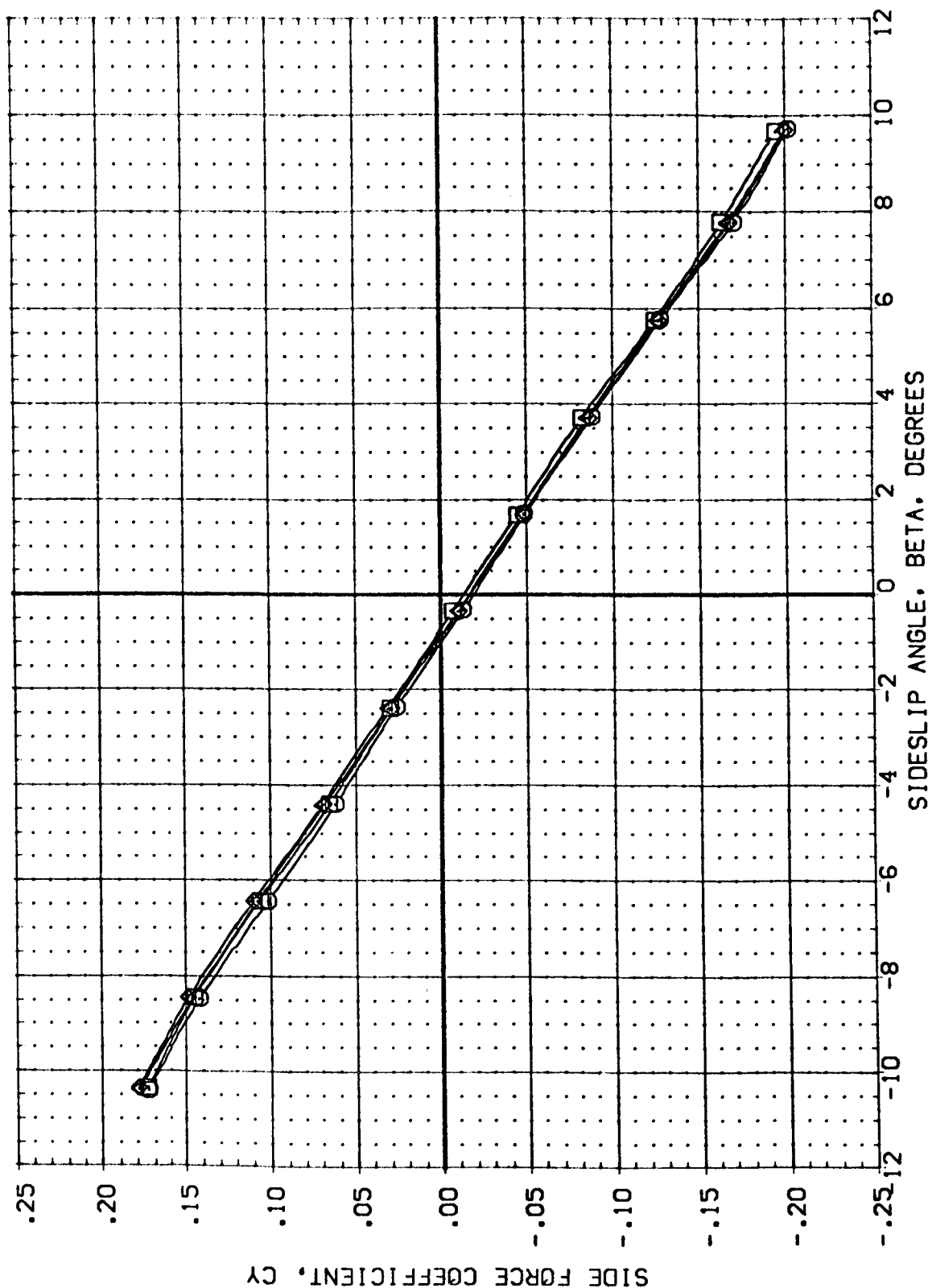


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

$$C_{ADMACH} = .59$$

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
MSFC 574(OA48) ORB 139B		10.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
MSFC 574(OA48) ORB 139B V/H19		10.000	.000	999.990	.000	LREF 474.8000 IN.
MSFC 574(OA48) ORB 139B V/H20		10.000	.000	999.990	.000	BREF 936.7000
MSFC 574(OA48) ORB 139B V/H23		10.000	.000	999.990	.000	XVRP 838.7000
DATA NOT AVAILABLE		10.000	.000	999.990	.000	YMRP .0000
		10.000	.000	999.990	.000	ZMRP .0000
		10.000	.000	999.990	.000	SCALE .0040

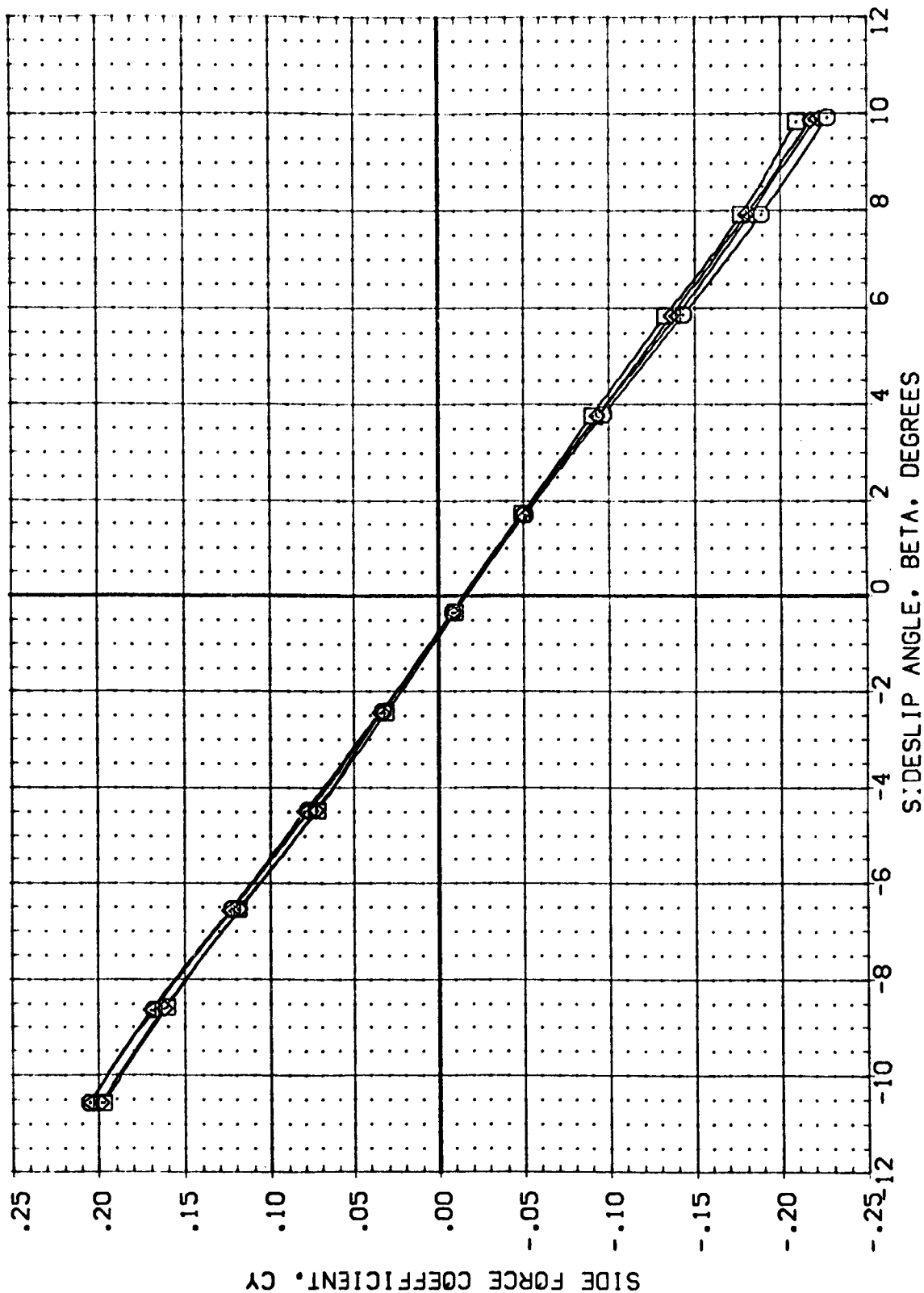


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(CA48) ORB 139B	10.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87087)	MSFC 574(CA48) ORB 139B W/H19	10.000	.000	999.990	.000	LREF 474.8000 N.
(A87090)	MSFC 574(CA48) ORB 139B W/H20	10.000	.000	999.990	.000	BREF 936.7000 N.
(A87095)	MSFC 574(CA48) ORB 139B W/H23	10.000	.000	999.990	.000	XMRP 838.7000 N.
(A87108)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	YMRP .0000 N.
						ZMRP .0000 N.
						SCALE .0040

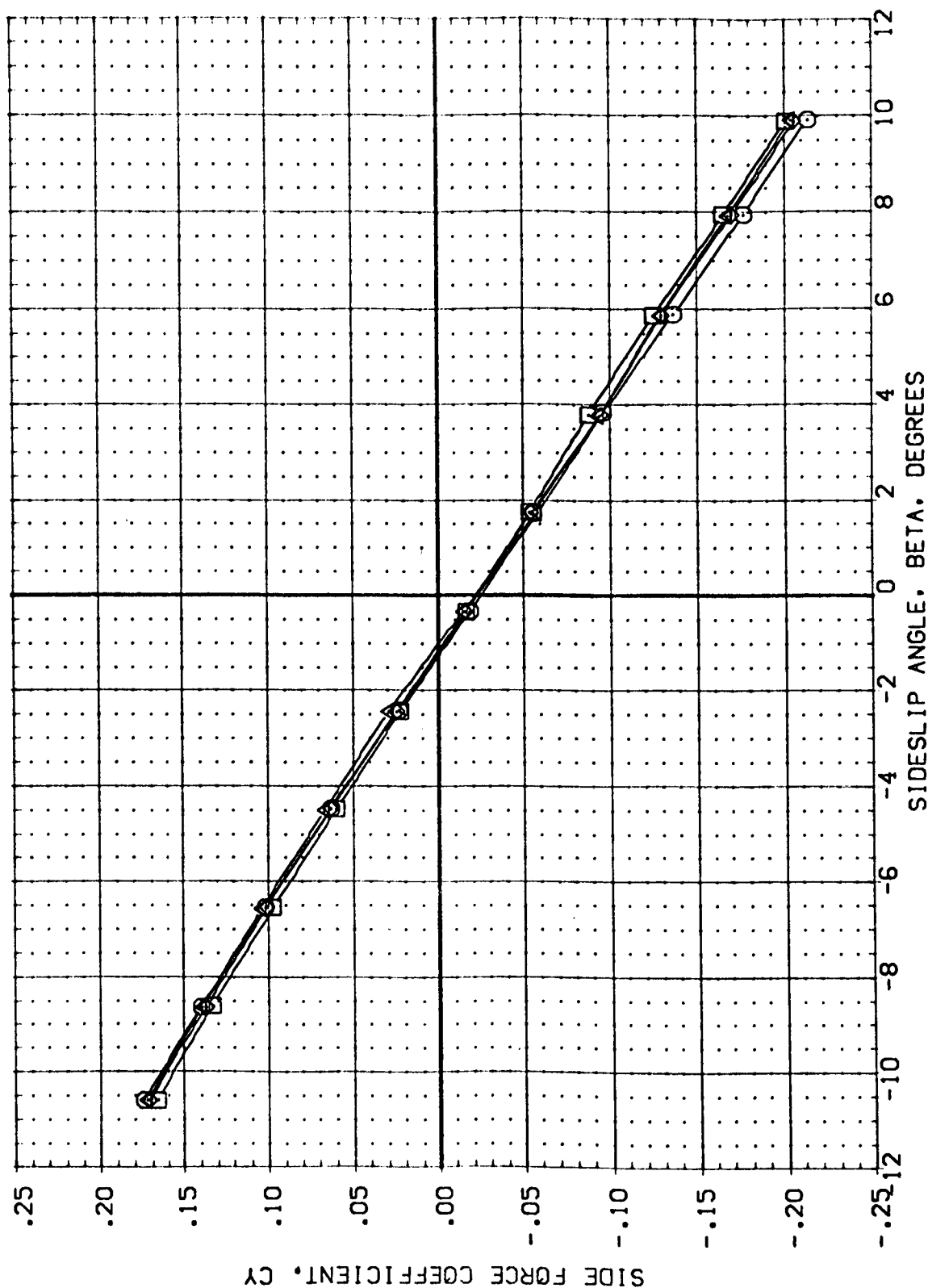
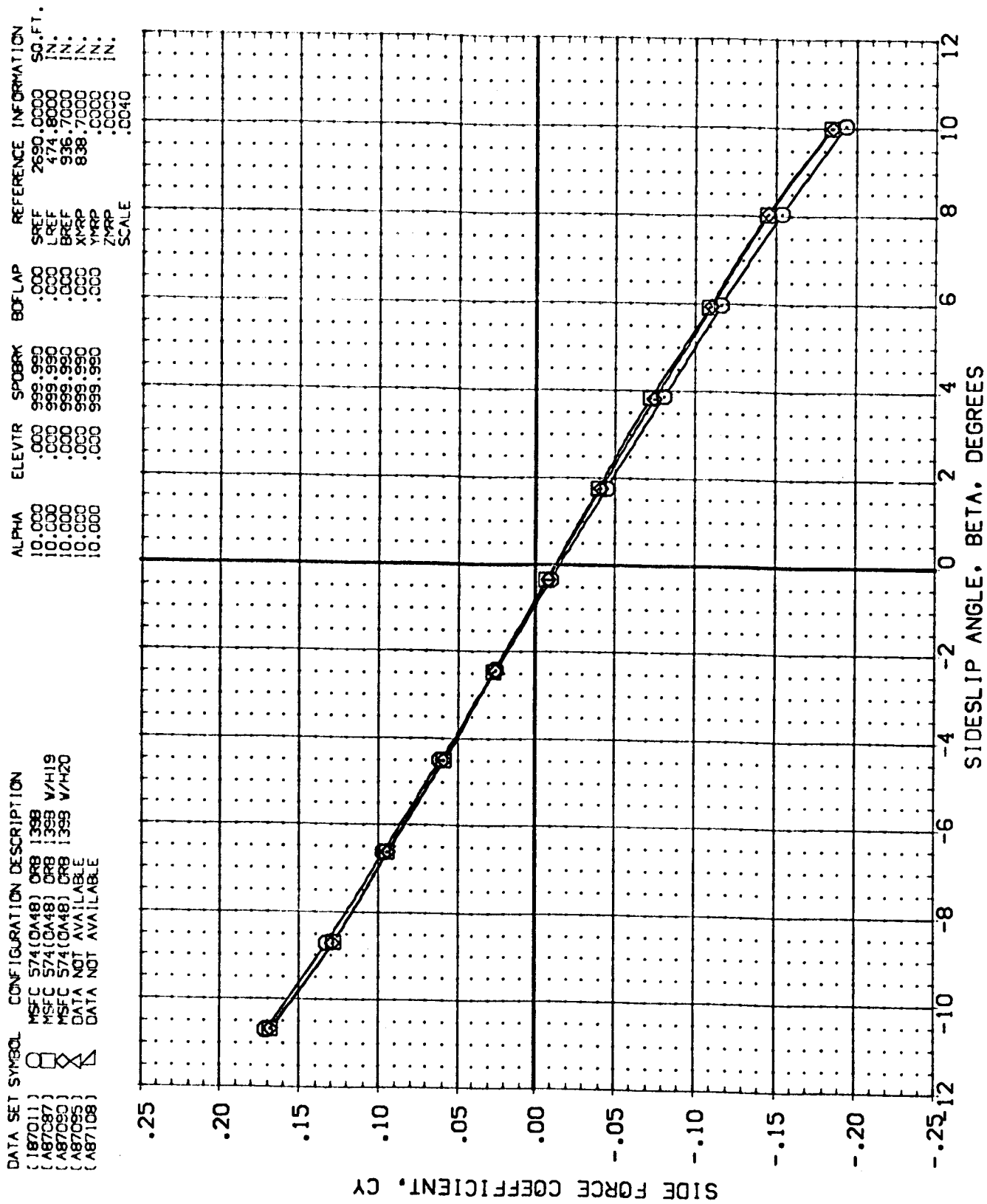


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(C)MACH = 1.19



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(OA48) ORB 1398	10.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87087)	MSFC 574(OA48) ORB 1398 W/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87090)	MSFC 574(OA48) ORB 1398 W/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(A87095)	MSFC 574(OA48) ORB 1398 W/H23	10.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87108)	MSFC 574(OA48) ORB 1398 W/H22	10.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

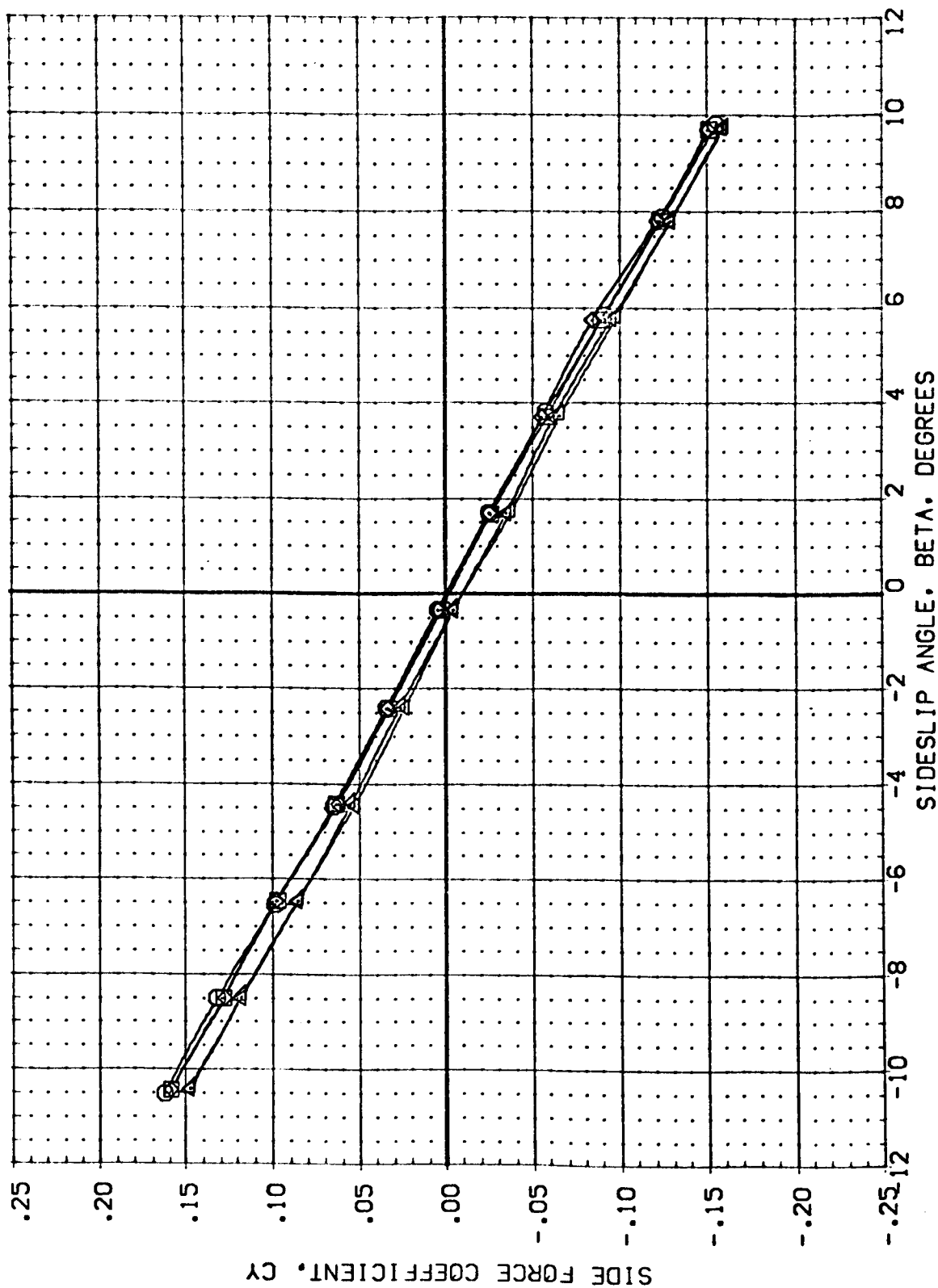


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 1870111 MSFC 574(DA48) ORB 1398 V/H19
 A87087 MSFC 574(DA48) ORB 1398 V/H19
 A87C90 MSFC 574(DA48) ORB 1398 V/H20
 A87C95 MSFC 574(DA48) ORB 1398 V/H23
 A87108 DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BCLAP REFERENCE INFORMATION
 10.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 10.000 .000 999.990 .000 BREF 936.7000 IN.
 10.000 .000 999.990 .000 XMRP 838.7000 IN.
 10.000 .000 999.990 .000 YMRP .0000 IN.
 10.000 .000 999.990 .000 ZMRP .0000 IN.
 SCALE .0040

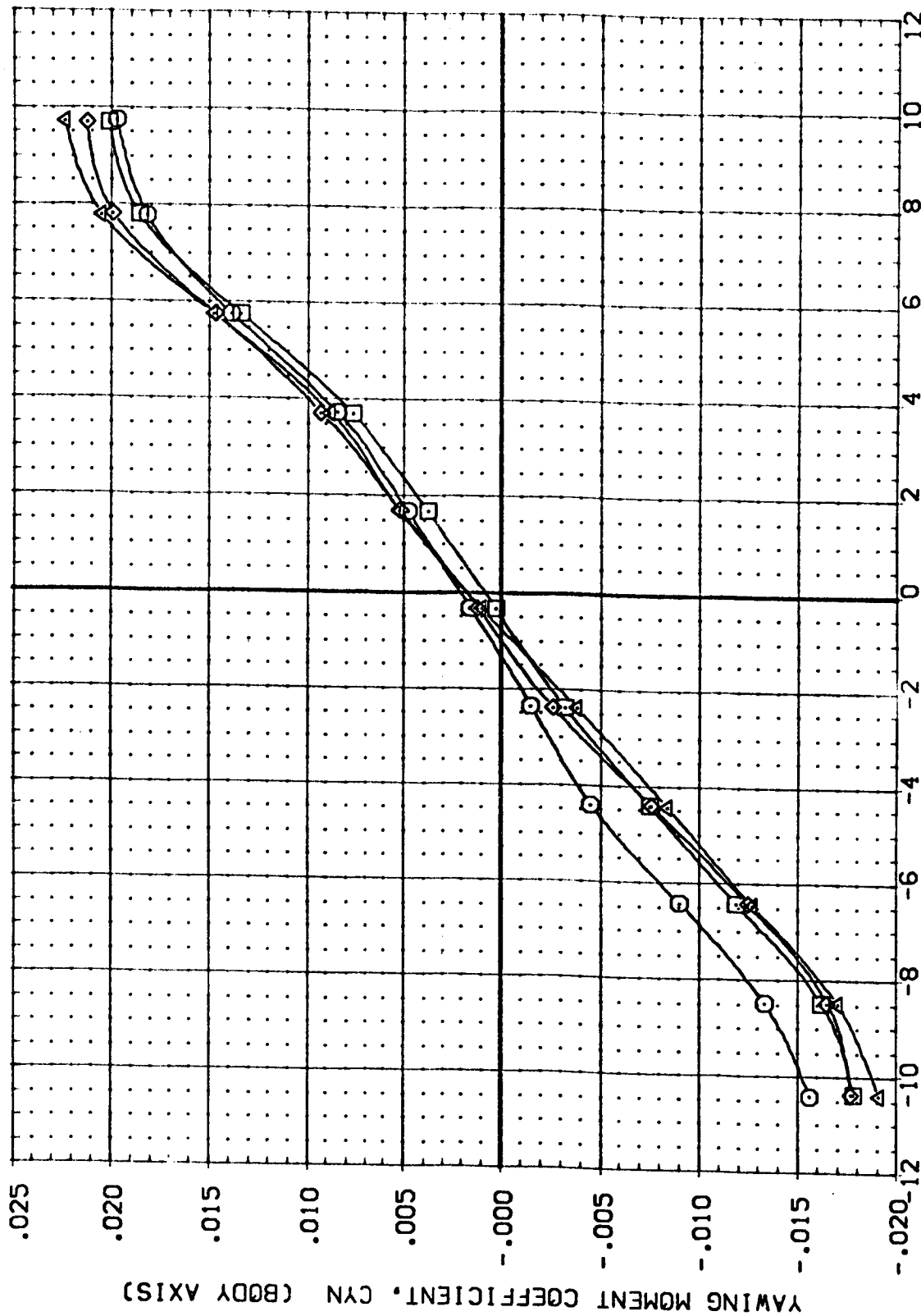


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	SPOBRK	ELEVTR	ALPHA	REFERENCE INFORMATION
{187011}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	SREF 2690.0000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	LREF 474.8000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	BREF 936.7000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	XMRP 838.7000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	YMRP .0000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	ZMRP .0000
{A87C87}	MSFC 574(OA48) CRB 1398	.000	999.990	.000	10.000	SCALE .0040

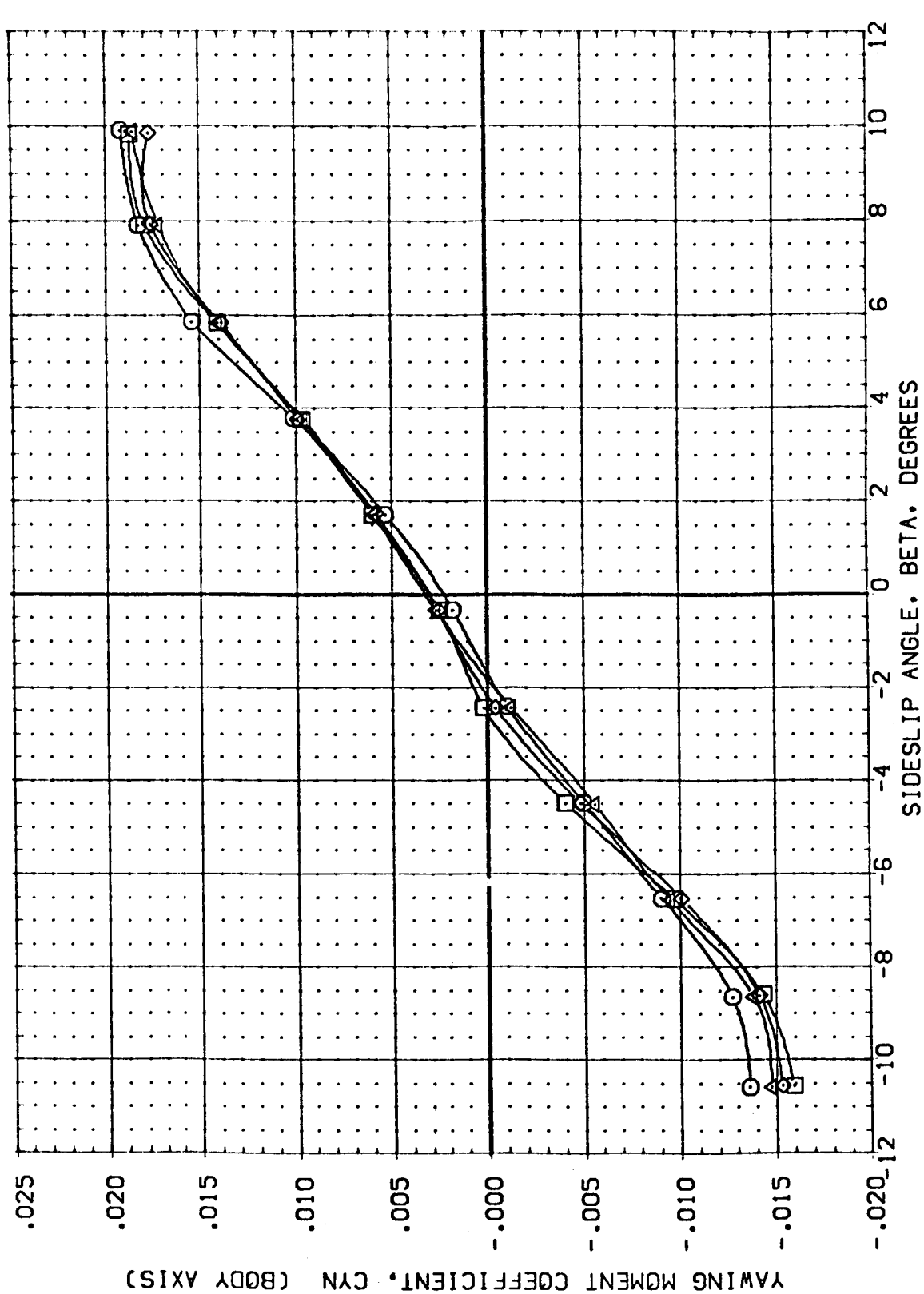


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(CA48) CRB 139B	10.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87087)	MSFC 574(CA48) CRB 139B V/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87090)	MSFC 574(CA48) CRB 139B V/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(A87095)	MSFC 574(CA48) CRB 139B V/H23	10.000	.000	999.990	.000	YMRP .0000 IN.
(A87108)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

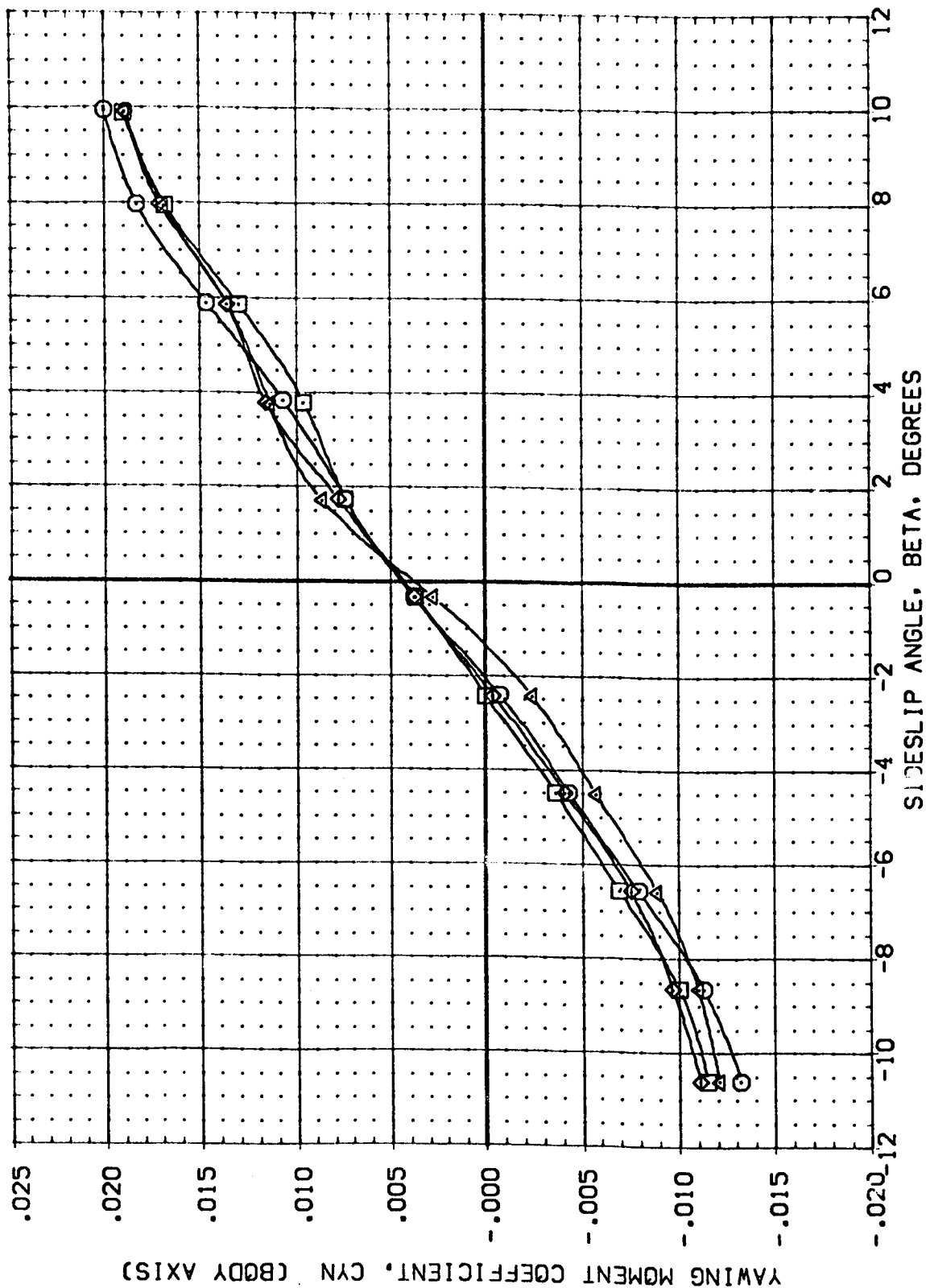


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(C)MACH = 1.19

ALPHA	ELEVTR	SPOBRK	BOELAP	REFERENCE	INFORMATION
10.000	.000	999.990	.000	SREF	2630.0000
10.000	.000	999.990	.000	LREF	474.8000
10.000	.000	999.990	.000	BREF	936.7000
10.000	.000	999.990	.000	XRRP	838.7000
10.000	.000	999.990	.000	YRRP	.0000
10.000	.000	999.990	.000	ZRRP	.0000
10.000	.000	999.990	.000	SCALE	.0040

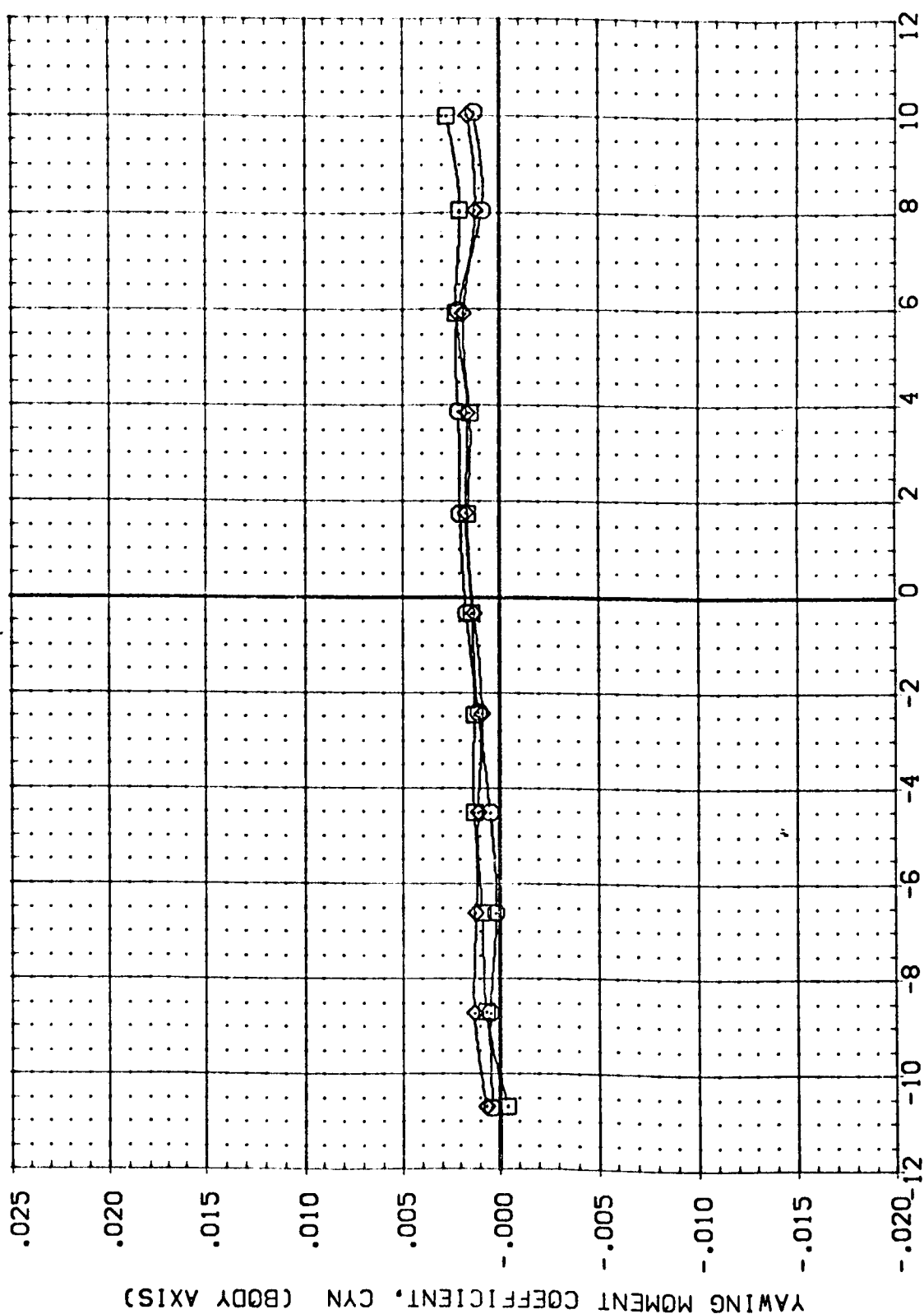


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10
SIDESLIP ANGLE, BETA, DEGREES

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187011)	MSFC 574 (CA48)	ORB 1398
(A87087)	MSFC 574 (CA48)	ORB 1398 V/H19
(A87090)	MSFC 574 (CA48)	ORB 1398 V/H20
(A87095)	MSFC 574 (CA48)	ORB 1398 V/H23
(A87108)	MSFC 574 (CA48)	ORB 1398 V/H22

ALPHA

10.000	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
10.000	.000	999.990	.000	SREF 2690.0000 SQ.F.T.
10.000	.000	999.990	.000	LREF 474.8000 IN.
10.000	.000	999.990	.000	BREF 936.7000 IN.
10.000	.000	999.990	.000	YMRP 838.7000 IN.
10.000	.000	999.990	.000	ZMRP .0000 IN.
10.000	.000	999.990	.000	SCALE .0040

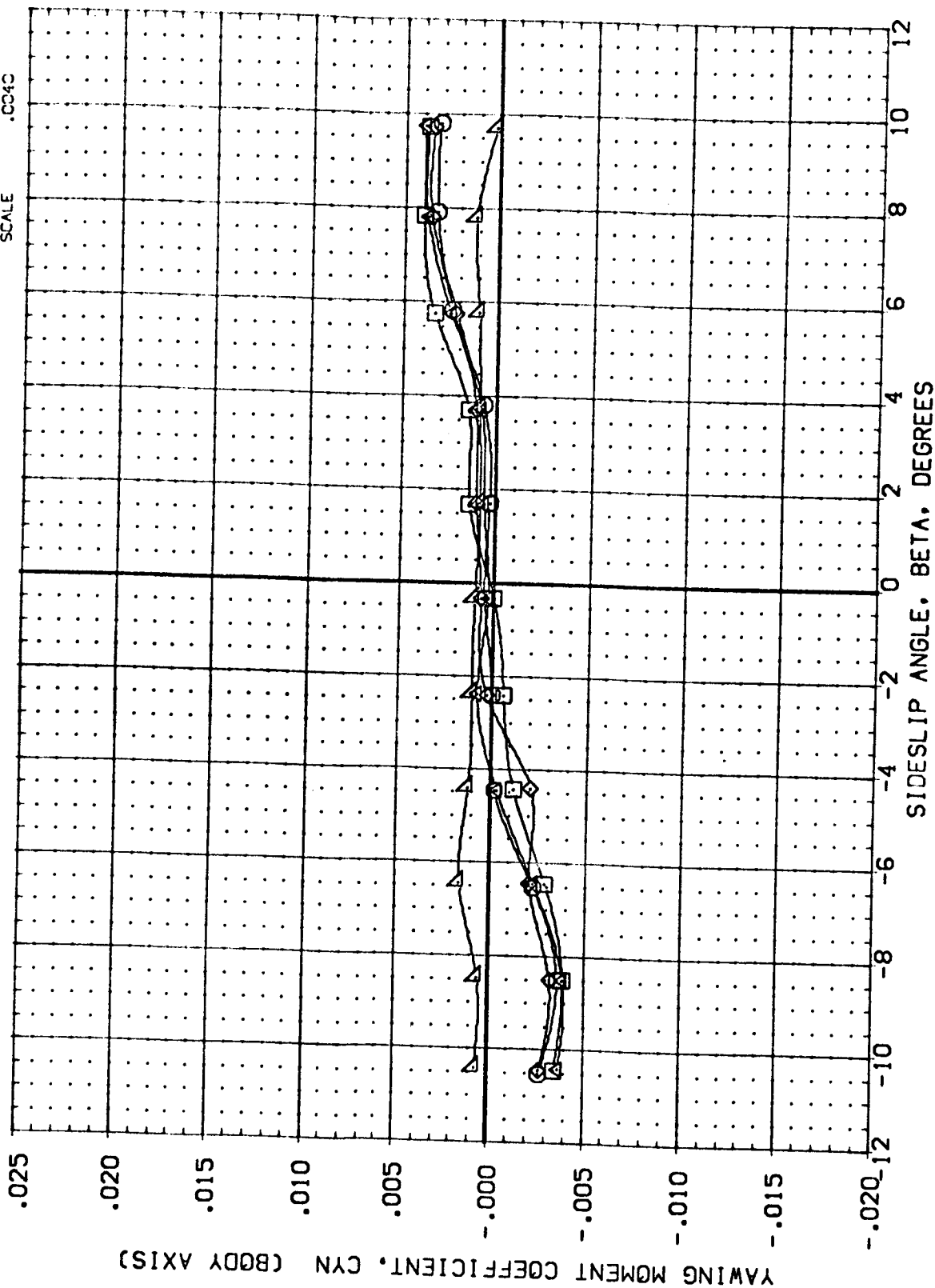


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 1398 WITH TRIMMER - ALPHA=10

CEJ MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

[187011] MSFC 574(CA48) CRB 1398 V/H19

[187087] MSFC 574(CA48) CRB 1398 V/H20

[187090] MSFC 574(CA48) CRB 1398 V/H23

[187095] MSFC 574(CA48) CRB 1398 V/H23

[187138] DATA NOT AVAILABLE

ALPHA 10.000
10.000
10.000
10.000
10.000

ELEVTR .000
.000
.000
.000
.000

SPOBRK 999.990
999.990
999.990
999.990
999.990

BOFLAP .000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8000
BREF 936.7000
XMRP 838.7000
YMRP .0000
ZMRP .0000
SCALE .0040

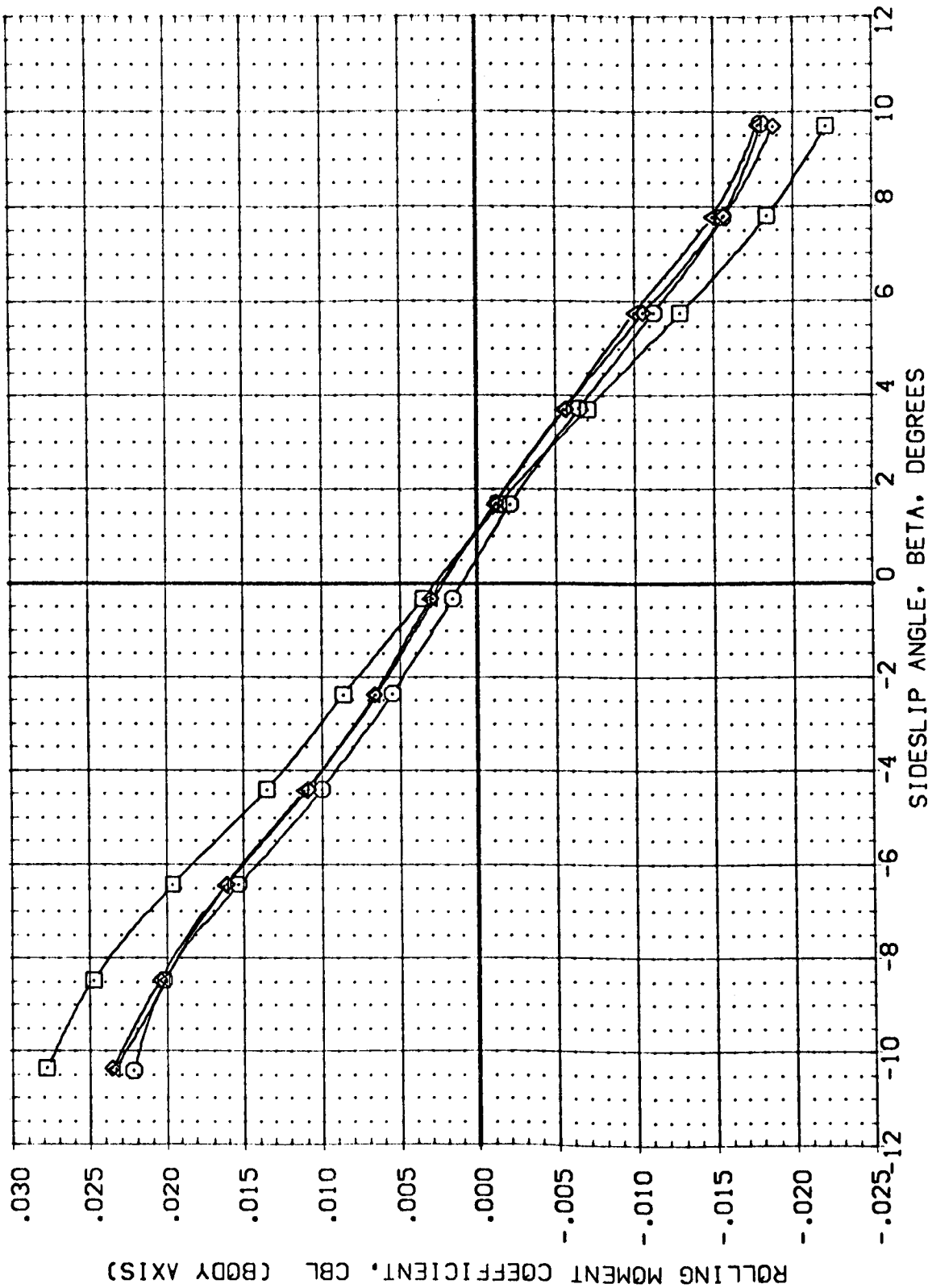


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

CAMMACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(187087)	MSFC 574(CA48) CRB 1398 V/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(187092)	MSFC 574(CA48) CRB 1398 V/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(187095)	MSFC 574(CA48) CRB 1398 V/H23	10.000	.000	999.990	.000	XMRP 836.7000 IN.
(187108)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

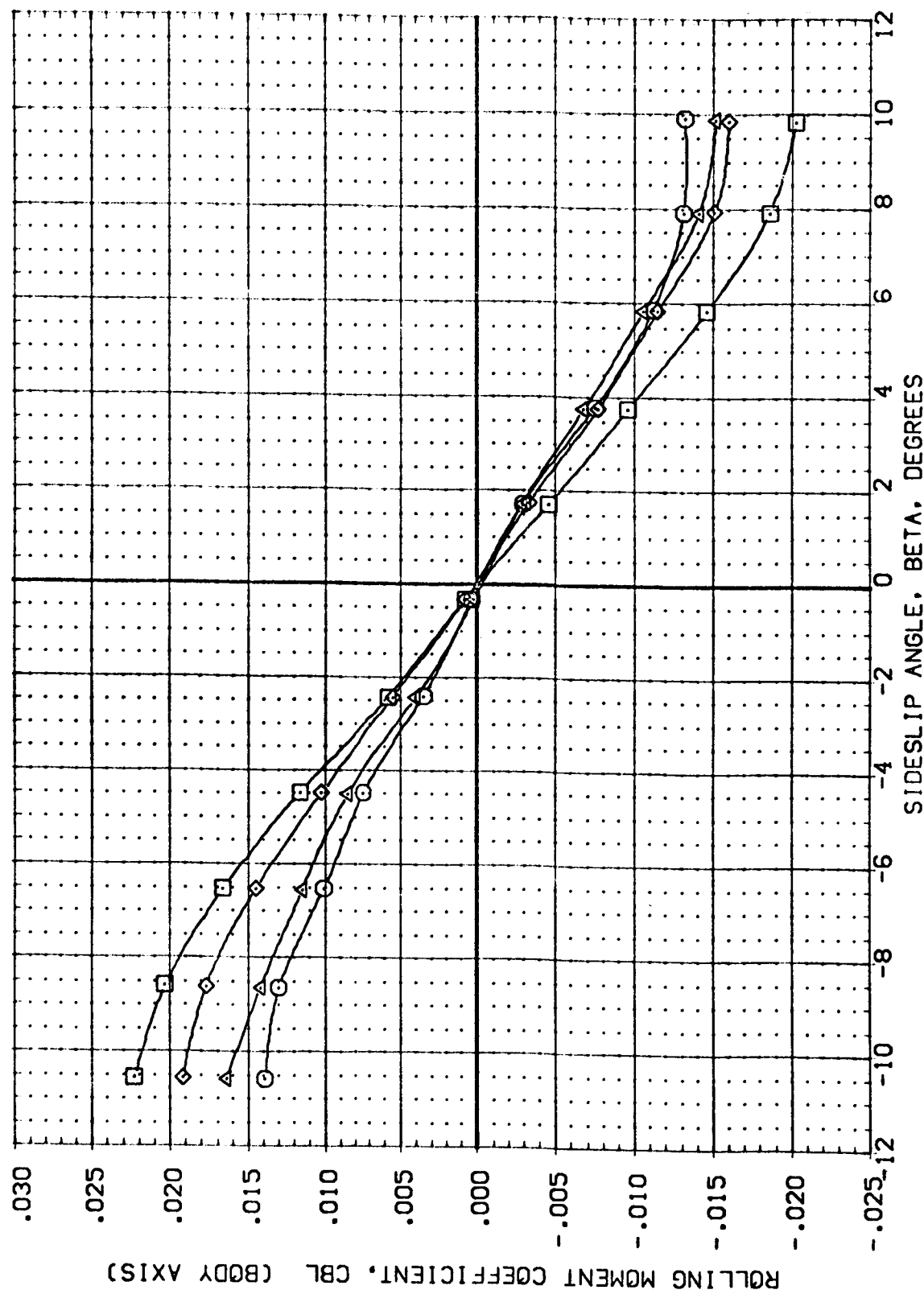


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 1398 WITH TRIMMER - ALPHA=10

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 1870111 MSFC 574(CA48) CRB 1398 V/H19
 A87097 MSFC 574(CA48) CRB 1398 V/H20
 A87090 MSFC 574(CA48) CRB 1398 V/H23
 A87095 MSFC 574(CA48) CRB 1398 V/H23
 A87108 DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 10.000 .000 999.990 .000 SREF 2690.0000 SG.FT.
 10.000 .000 999.990 .000 LREF 474.8000
 10.000 .000 999.990 .000 BREF 936.7000
 10.000 .000 999.990 .000 XMRP 838.7000
 10.000 .000 999.990 .000 YMRP .0000
 10.000 .000 999.990 .000 ZMRP .0000
 SCALE .0040

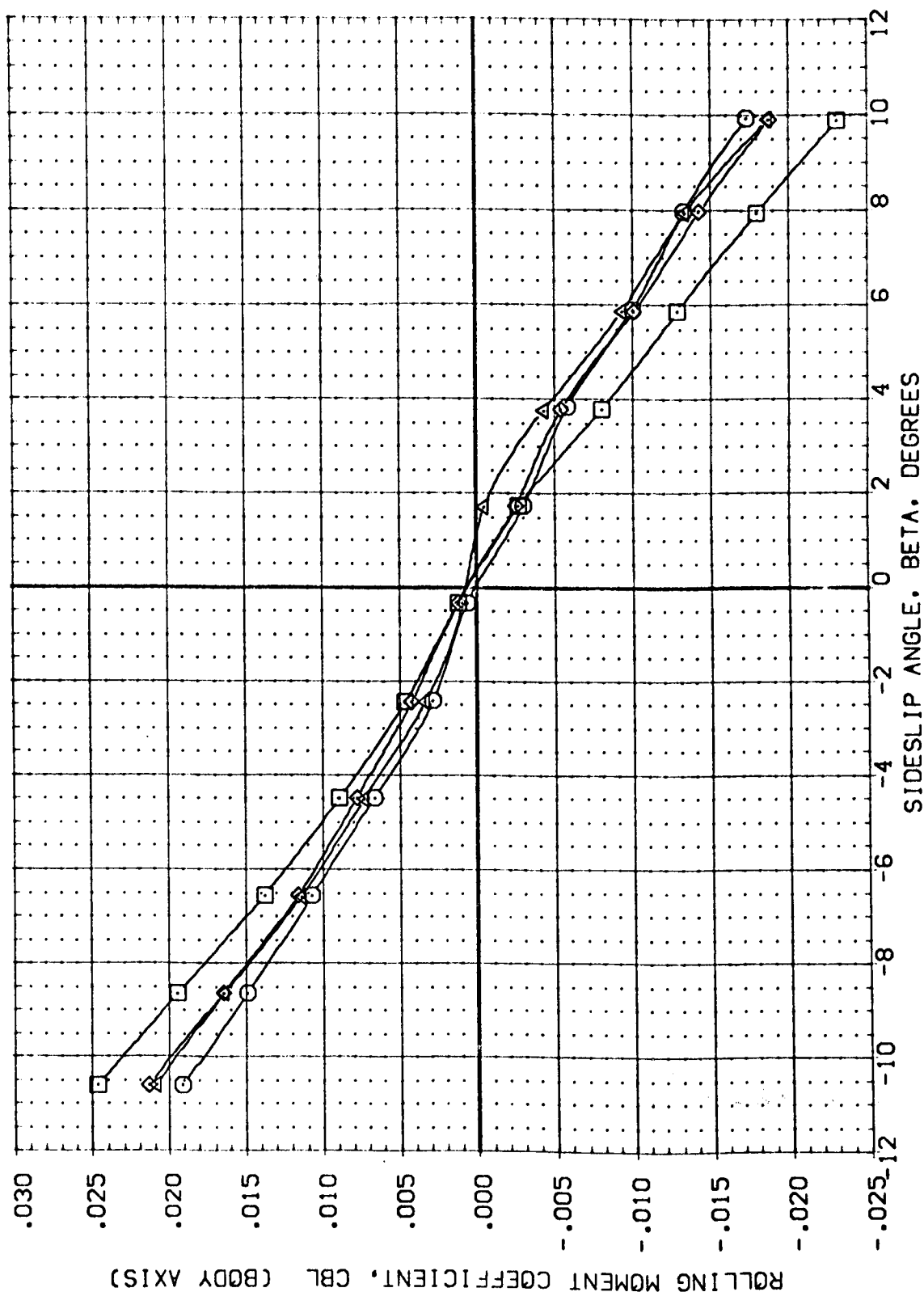


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(C)MACH = 1.19

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(CA48) ORB 1393	10.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87087)	MSFC 574(CA48) ORB 1393 V/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87090)	MSFC 574(CA48) ORB 1393 V/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(A87095)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87108)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

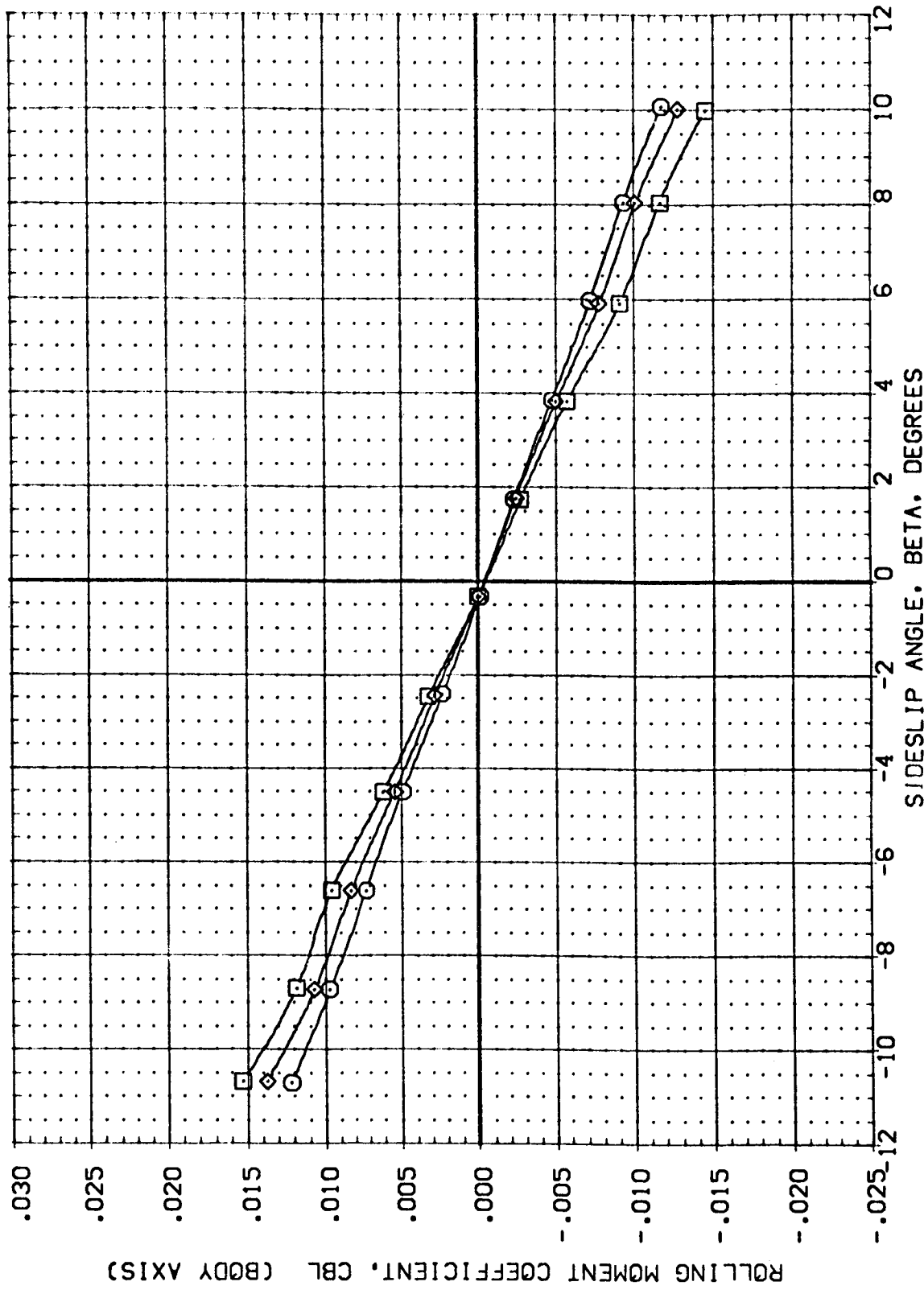


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(OA48) ORB 1398	10.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(187037)	MSFC 574(OA48) ORB 1398 V/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(187050)	MSFC 574(OA48) ORB 1398 V/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(187055)	MSFC 574(OA48) ORB 1398 V/H23	10.000	.000	999.990	.000	XMRP 838.7000 IN.
(187108)	MSFC 574(OA48) ORB 1398 V/H22	10.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

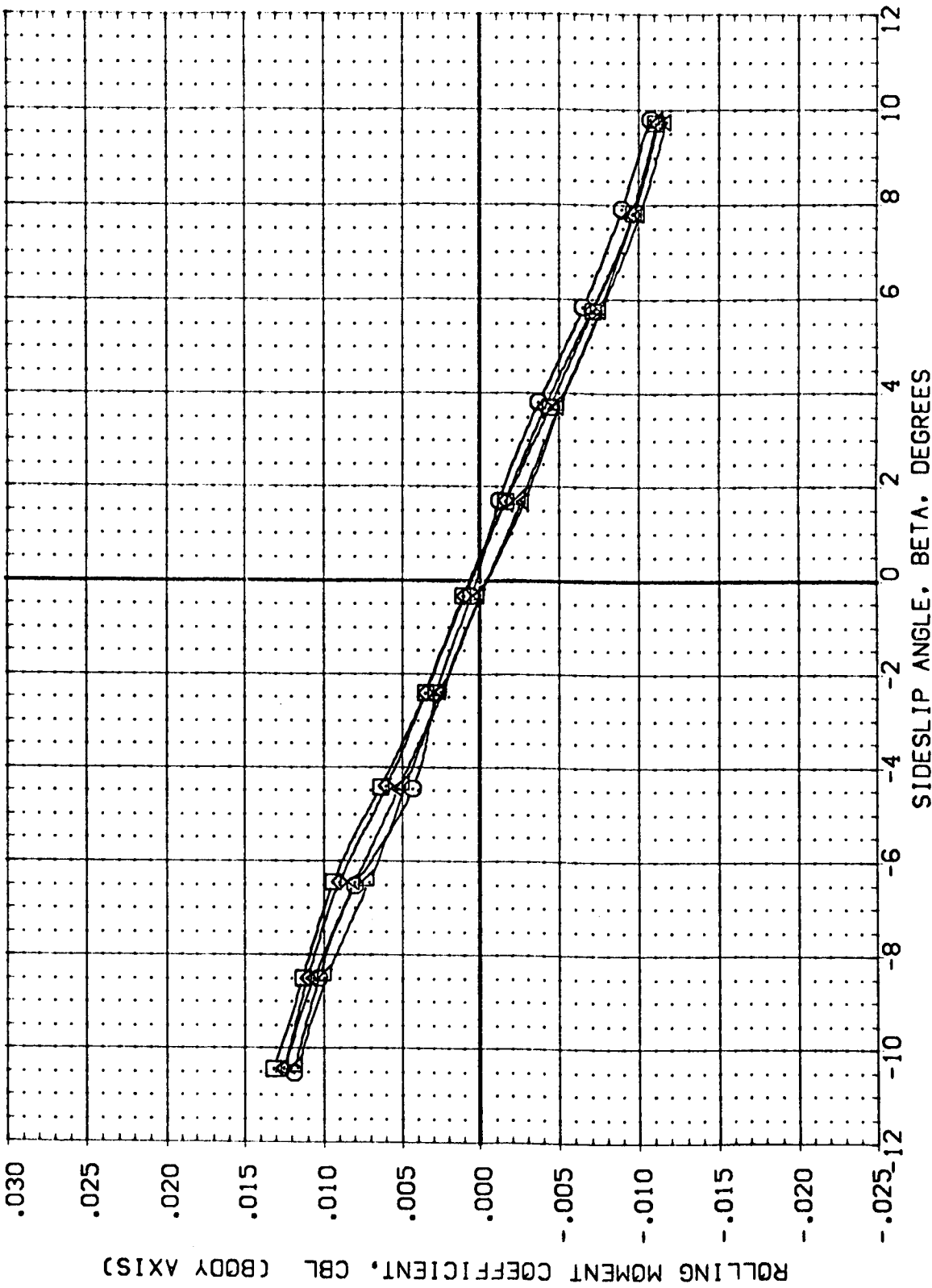


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187012)	MSFC 574(OA48) CRB 139B	20.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87088)	MSFC 574(OA48) CRB 139B V/H19	20.000	.000	999.990	.000	UREF 474.8000 IN.
(A87089)	MSFC 574(OA48) CRB 139B V/H20	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87096)	MSFC 574(OA48) CRB 139B V/H23	20.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87109)	MSFC 574(OA48) CRB 139B V/H22	20.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

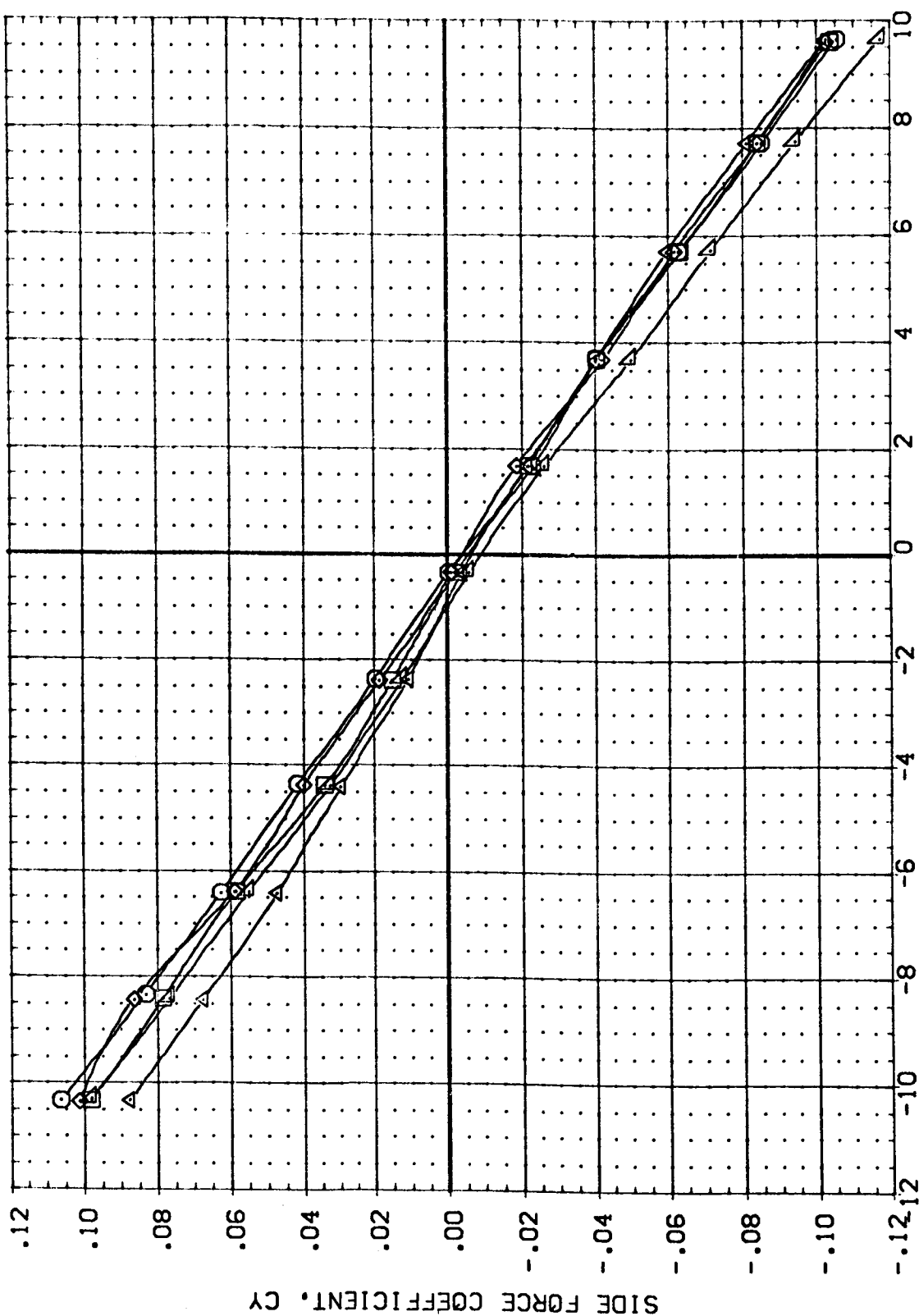


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=20

(A)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187012)	MSFC 574(CA48) CRB 139B V/H19	20.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(187088)	MSFC 574(CA48) CRB 139B V/H19	20.000	.000	999.990	.000	LREF 474.8000 N.
(187089)	MSFC 574(CA48) CRB 139B V/H20	20.000	.000	999.990	.000	BREF 936.7000 N.
(187096)	MSFC 574(CA48) CRB 139B V/H23	20.000	.000	999.990	.000	XREF 838.7000 N.
(187099)	MSFC 574(CA48) CRB 139B V/H22	20.000	.000	999.990	.000	YREF .0000 N.
(187099)	MSFC 574(CA48) CRB 139B V/H22	20.000	.000	999.990	.000	ZREF .0000 N.
						SCALE .0040

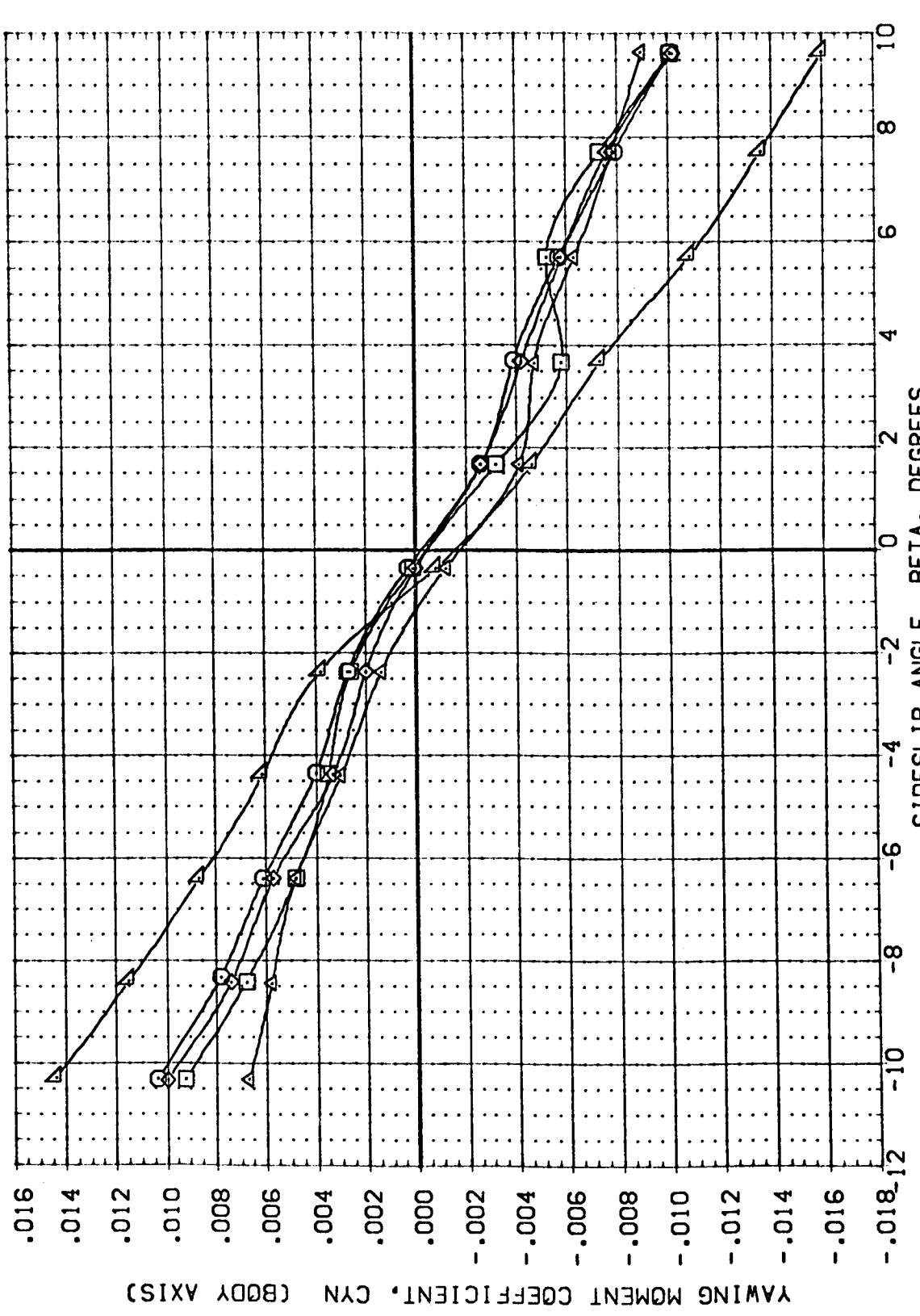


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=20
 (A)MACH = 4.96
 PAGE 1034

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187012)	MSFC 574(CA48) ORB 1398	20.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(A87C88)	MSFC 574(CA48) ORB 1398	20.000	.000	999.990	.000	LREF 474.8000 IN.
(A87C89)	MSFC 574(CA48) ORB 1398	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87C95)	MSFC 574(CA48) ORB 1398	20.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87C99)	MSFC 574(CA48) ORB 1398	20.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

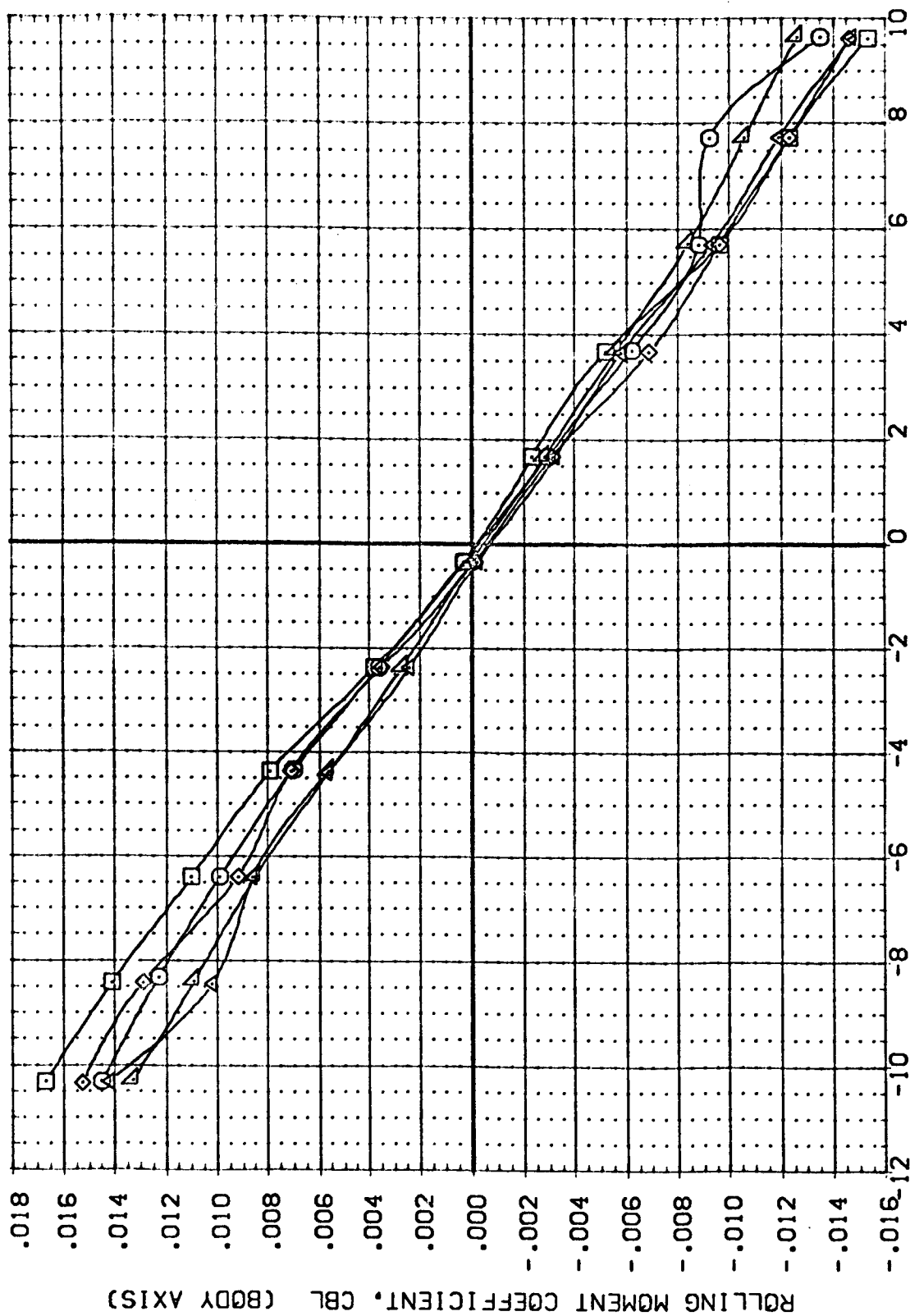


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 1398 WITH TRIMMER - ALPHA=20

SYMBOL		MACH		ELEVTR		BOFLAP		PARAMETRIC VALUES		.000		.999		.000		DATA SOURCE		DATASET		ALPHA		SREF		REFERENCE INFORMATION	
O		.600		.000		.000		AILRON		.000		.999		.000		ALPHA		J87010		10.000		2690.0000		SQ.FT.	
□		.900		.000		.000		SPDRK		.000		.999		.000		30.000		J87011		10.000		474.8000		LREF	
◇		1.200		.000		.000				.000		.999		.000		30.000		J87013		30.000		936.7000		BREF	
△		1.960		.000		.000				.000		.999		.000		30.000		J87014		30.000		838.7000		XMRP	
▽		2.990		.000		.000				.000		.999		.000		30.000				30.000		.0000		YMRP	
△		4.960		.000		.000				.000		.999		.000		30.000				30.000		.0000		ZMRP	
▽				.000		.000				.000		.999		.000		30.000				30.000		.0000		SCALE	

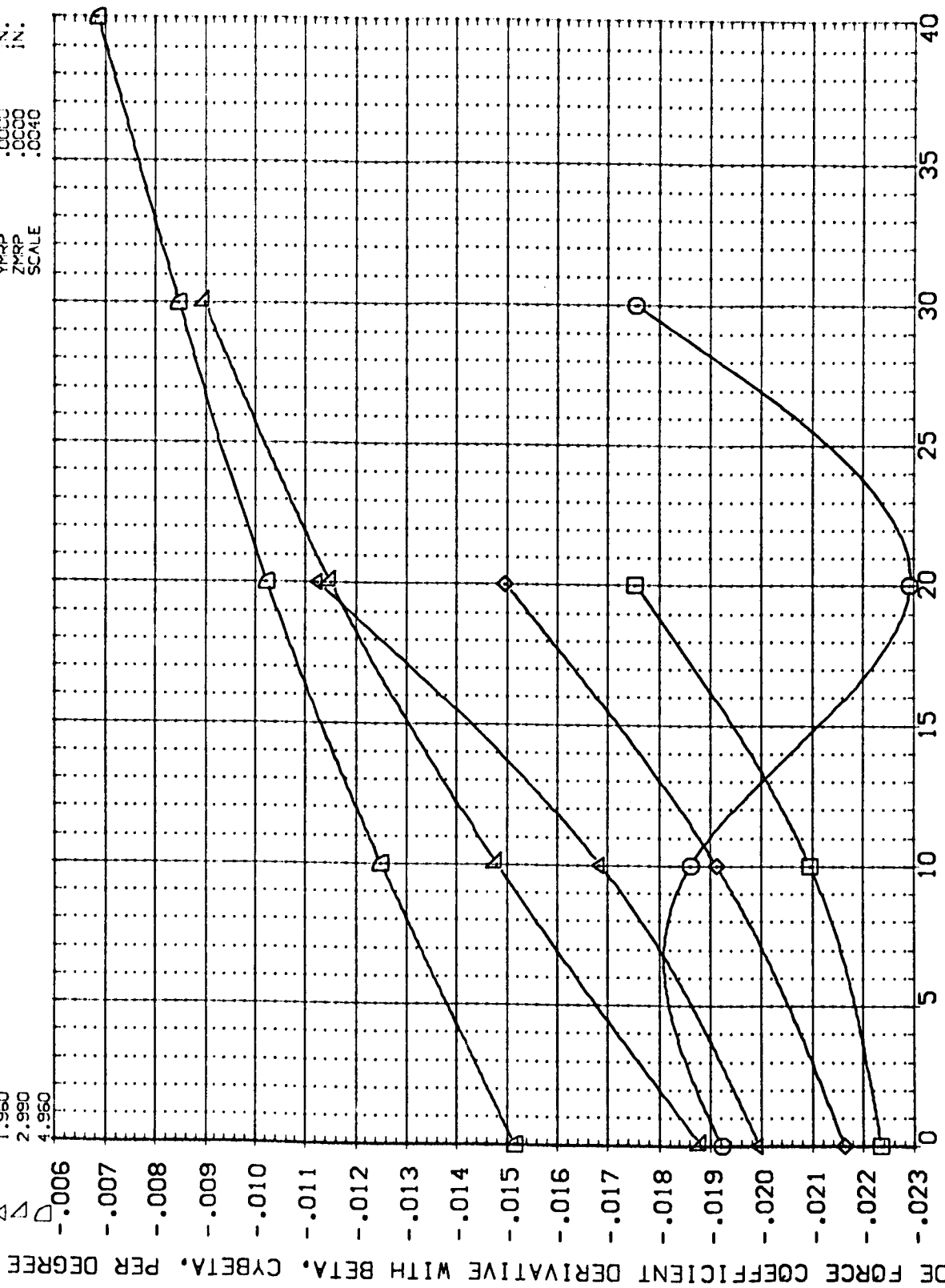


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B



MSFC 574(0A48) ORB 139B

(J87010)

SYMBOL		MACH		ELEVTR		BOFLAP		PARAMETRIC VALUES		.000		.999		.000		DATA SOURCE		ALPHA		DATASET		ALPHA		SREF		REFERENCE INFORMATION		SQ.FT.	
○		.600						.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON	.000	AILRON
□		.900						.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK	.000	SPOBRK
◇		1.200						.000		.000		.000		.000		.000		.000		.000		.000		.000		.000		.000	
△		1.960						.000		.000		.000		.000		.000		.000		.000		.000		.000		.000		.000	
▽		2.990						.000		.000		.000		.000		.000		.000		.000		.000		.000		.000		.000	
◊		4.960						.000		.000		.000		.000		.000		.000		.000		.000		.000		.000		.000	

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYMBET, PER DEGREE

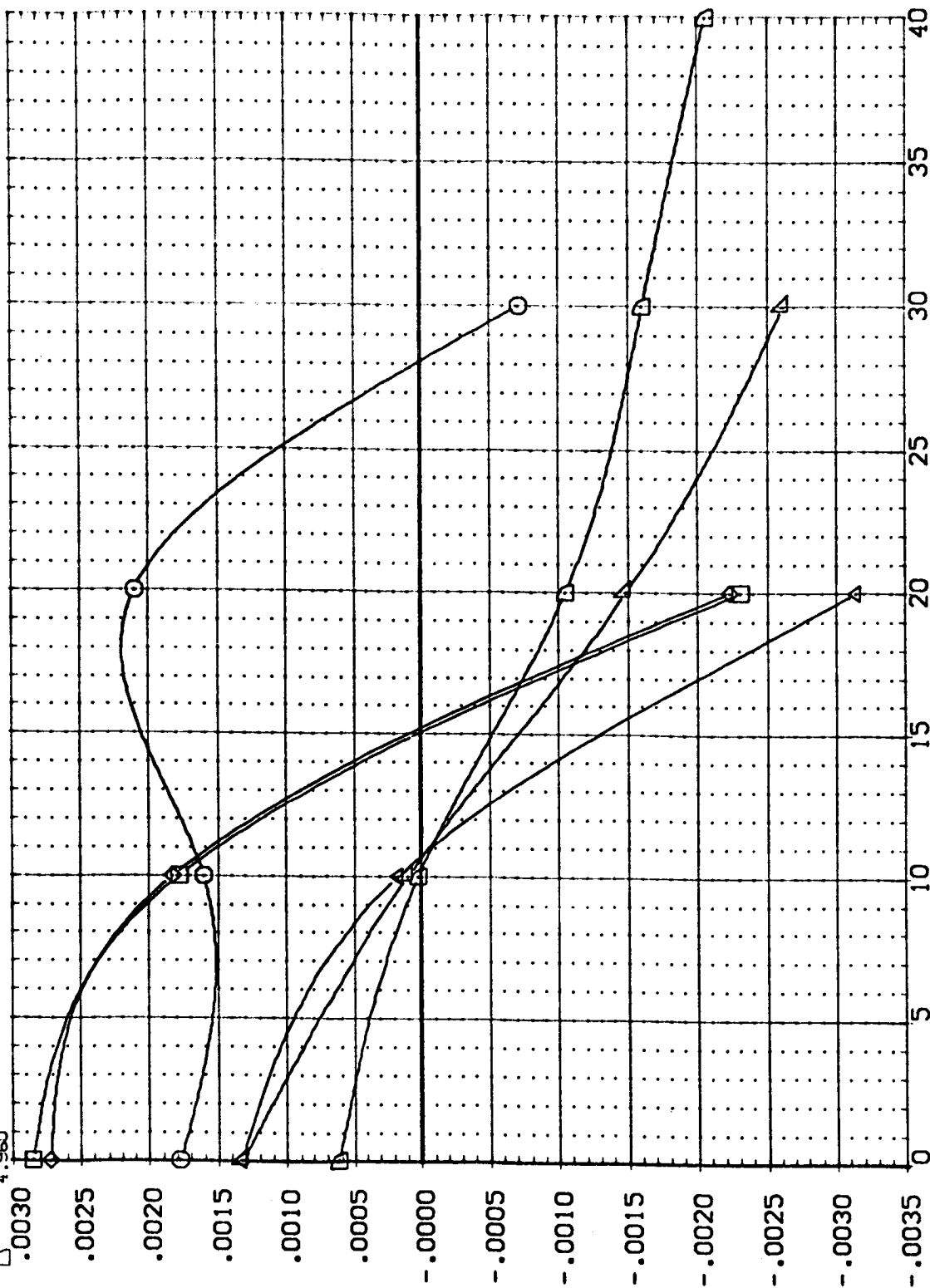


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 836.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

DATA SOURCE
 ALPHA .000
 DATASET J87011
 J87013

PARAMETRIC VALUES
 .000 DATASET J87010
 999.990 J87012
 40.000 J87014

PARAMETRIC VALUES
 .000 AIRRON
 .000 SPOBRK

ELEVTR
 BOFLAP

MACH
 .600
 .900
 1.200
 1.960
 2.990
 4.960

SYMBOL
 ○
 □
 ◇
 △
 ▽
 ▴

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLRBET, PER DEGREE

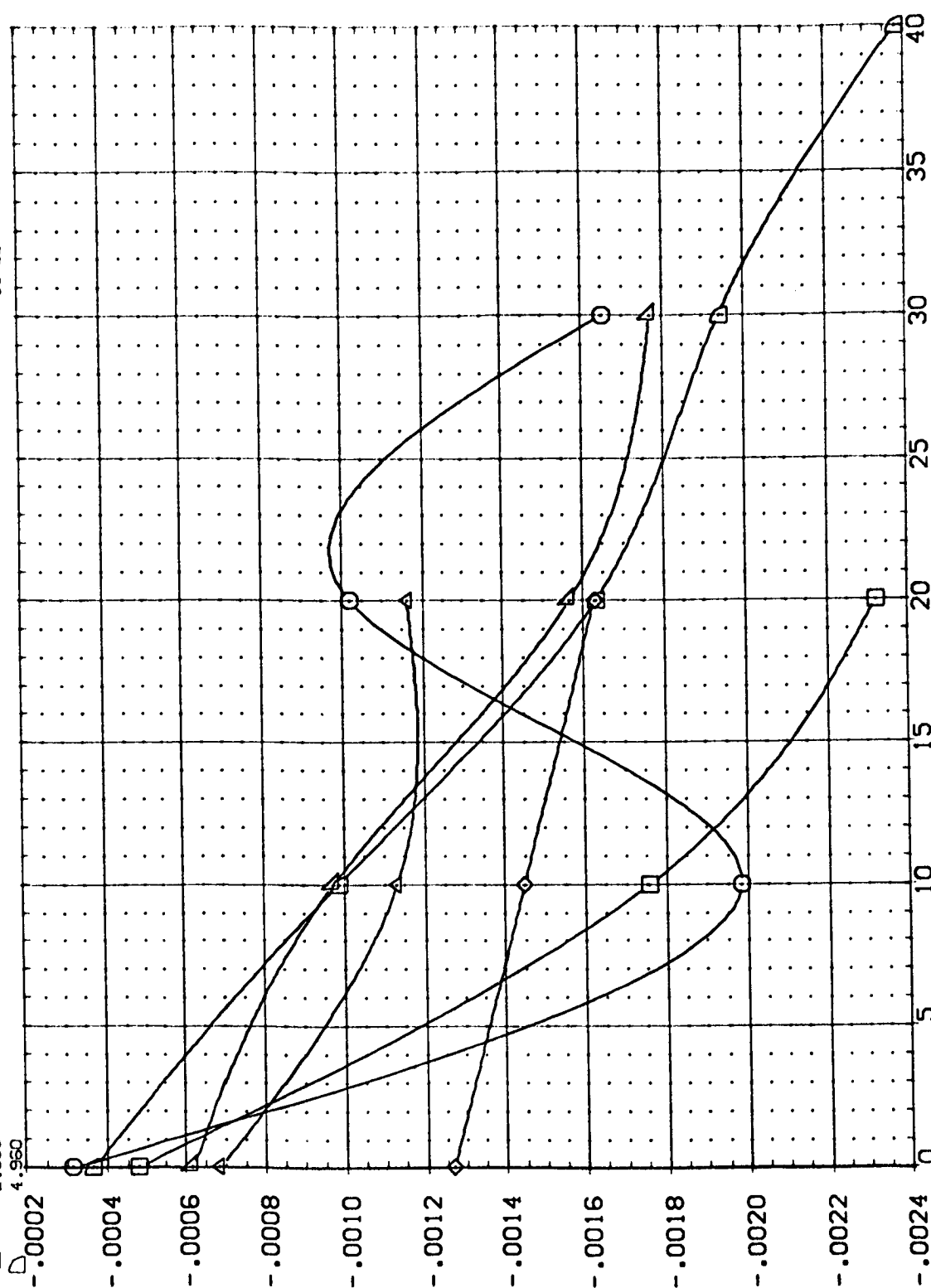


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE	SQ.FT.
[A87010]	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	2690.0000	.000	936.7000	.000	.0000	.0000	.0340	N.
[A87011]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	474.8000	.000	936.7000	.000	.0000	.0000	.0340	N.
[A87012]	MSFC 574(CA48) CRB 1398	20.000	.000	999.990	.000	936.7000	.000	936.7000	.000	.0000	.0000	.0340	N.
[A87013]	MSFC 574(CA48) CRB 1398	30.000	.000	999.990	.000	836.7000	.000	936.7000	.000	.0000	.0000	.0340	N.
[A87014]	MSFC 574(CA48) CRB 1398	40.000	.000	999.990	.000	836.7000	.000	936.7000	.000	.0000	.0000	.0340	N.

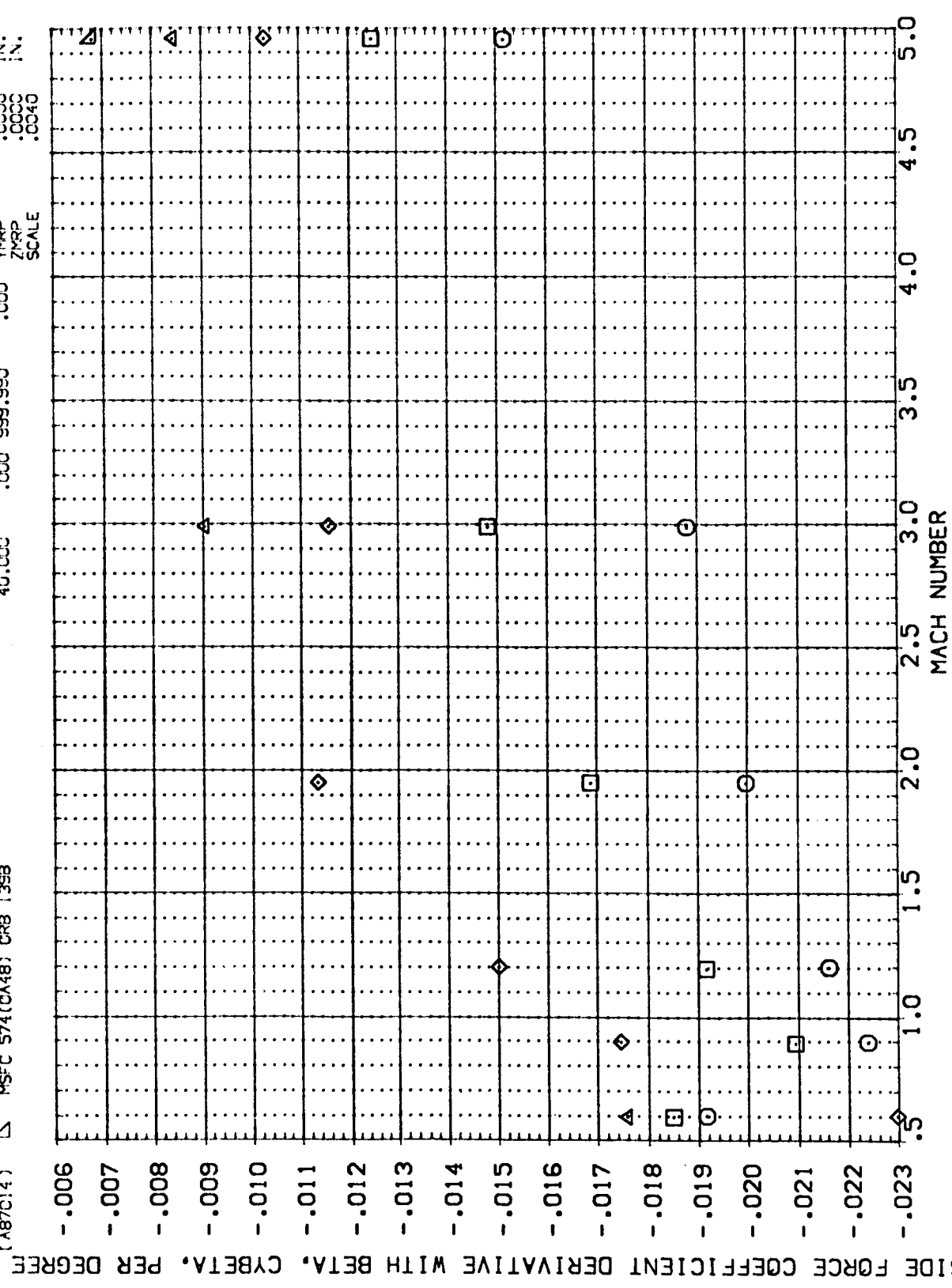


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 1398

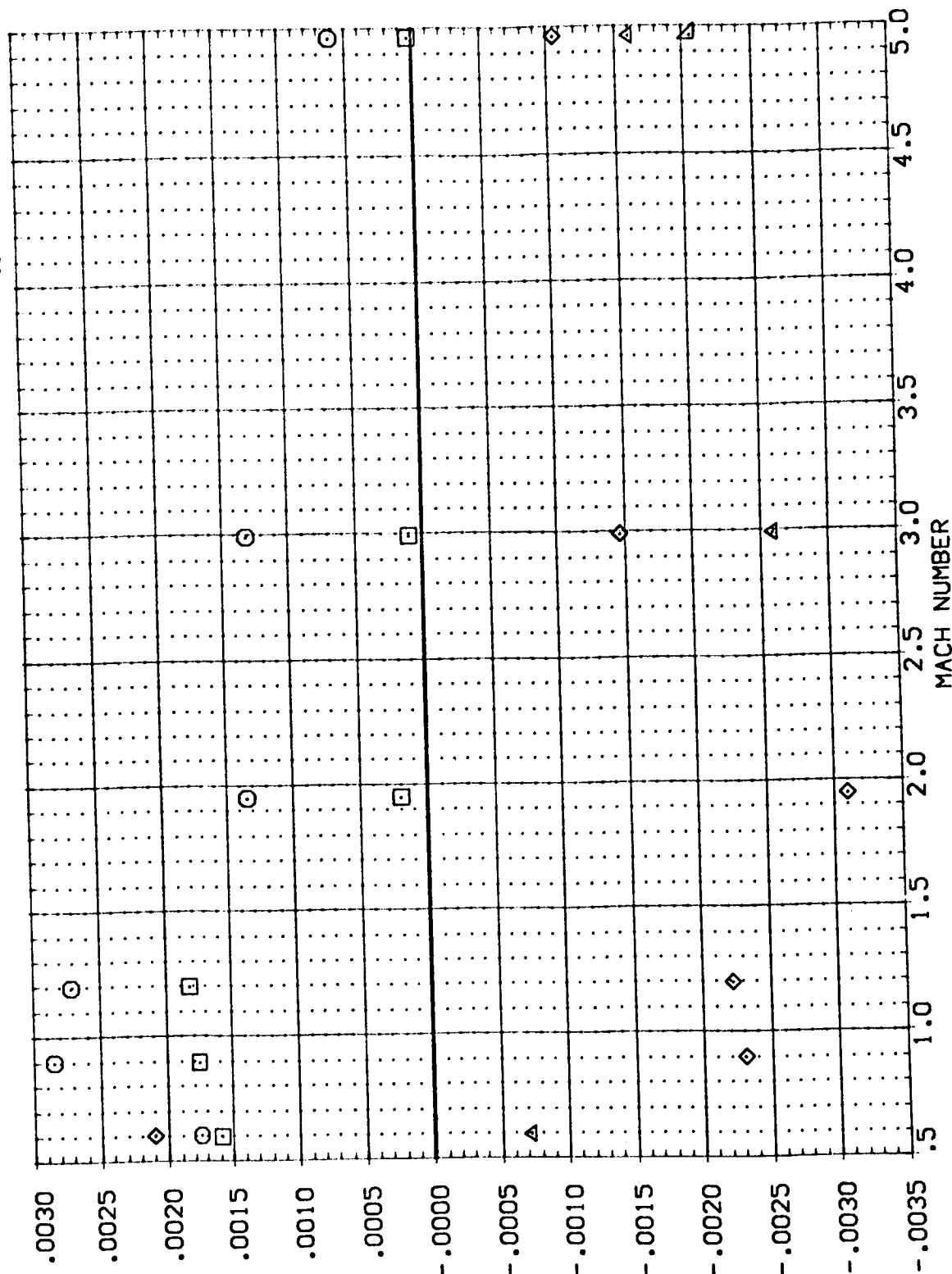
[illegible]

FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(A87G10) MSFC 574(DA48) CRB 1393
(A87G11) MSFC 574(DA48) CRB 1393
(A87G12) MSFC 574(DA48) CRB 1393
(A87G13) MSFC 574(DA48) CRB 1393
(A87G14) MSFC 574(DA48) CRB 1393

ALPHA ELEVTR SPOBRK BOELAP REFERENCE INFORMATION
.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
10.0000 .000 999.990 .000 LREF 474.8000 IN.
20.0000 .000 999.990 .000 BREF 936.7000
30.0000 .000 999.990 .000 XREF 838.7000
40.0000 .000 999.990 .000 YREF .0000
SCALE ZREF .0000
.0040

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

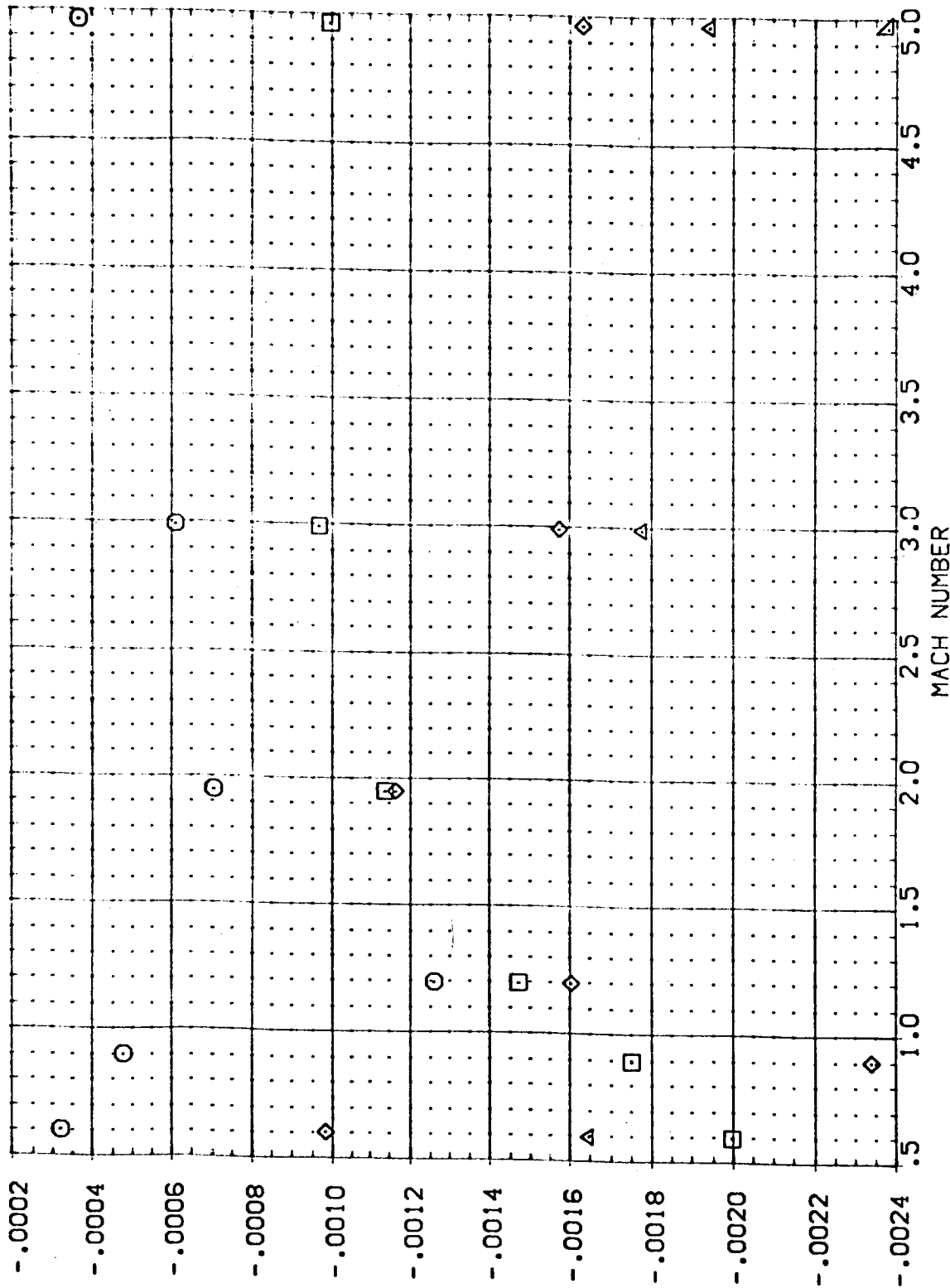


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

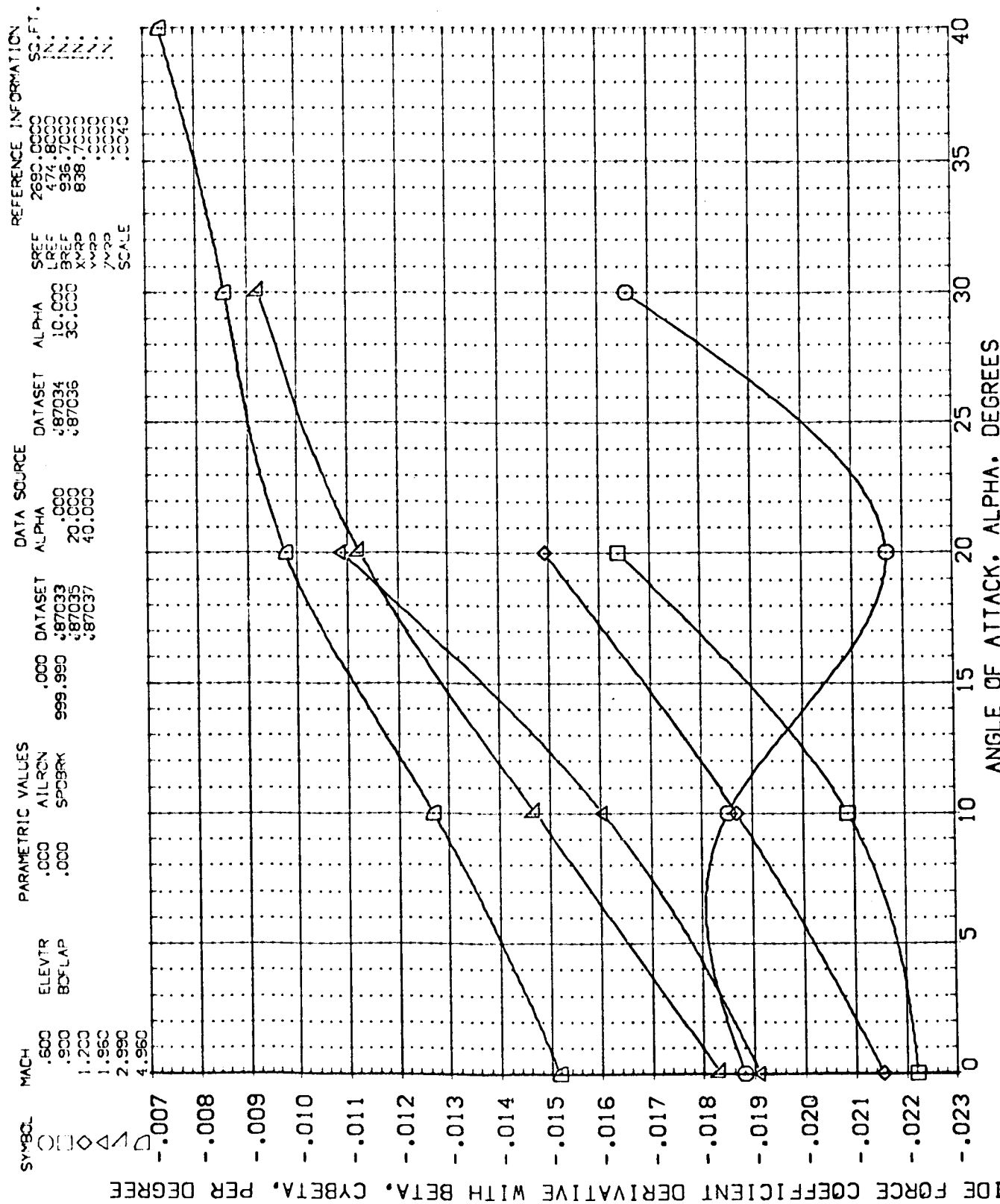


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE ANGLE OF ATTACK. ALPHA. DEGREES PAGE : C42

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(CA48) CRB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(CA48) CRB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(CA48) CRB 139B V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	MSFC 574(CA48) CRB 139B V/ALT NOSE	40.000	.000	999.990	.000	YMRP .0000 IN.
						SCALE .0040

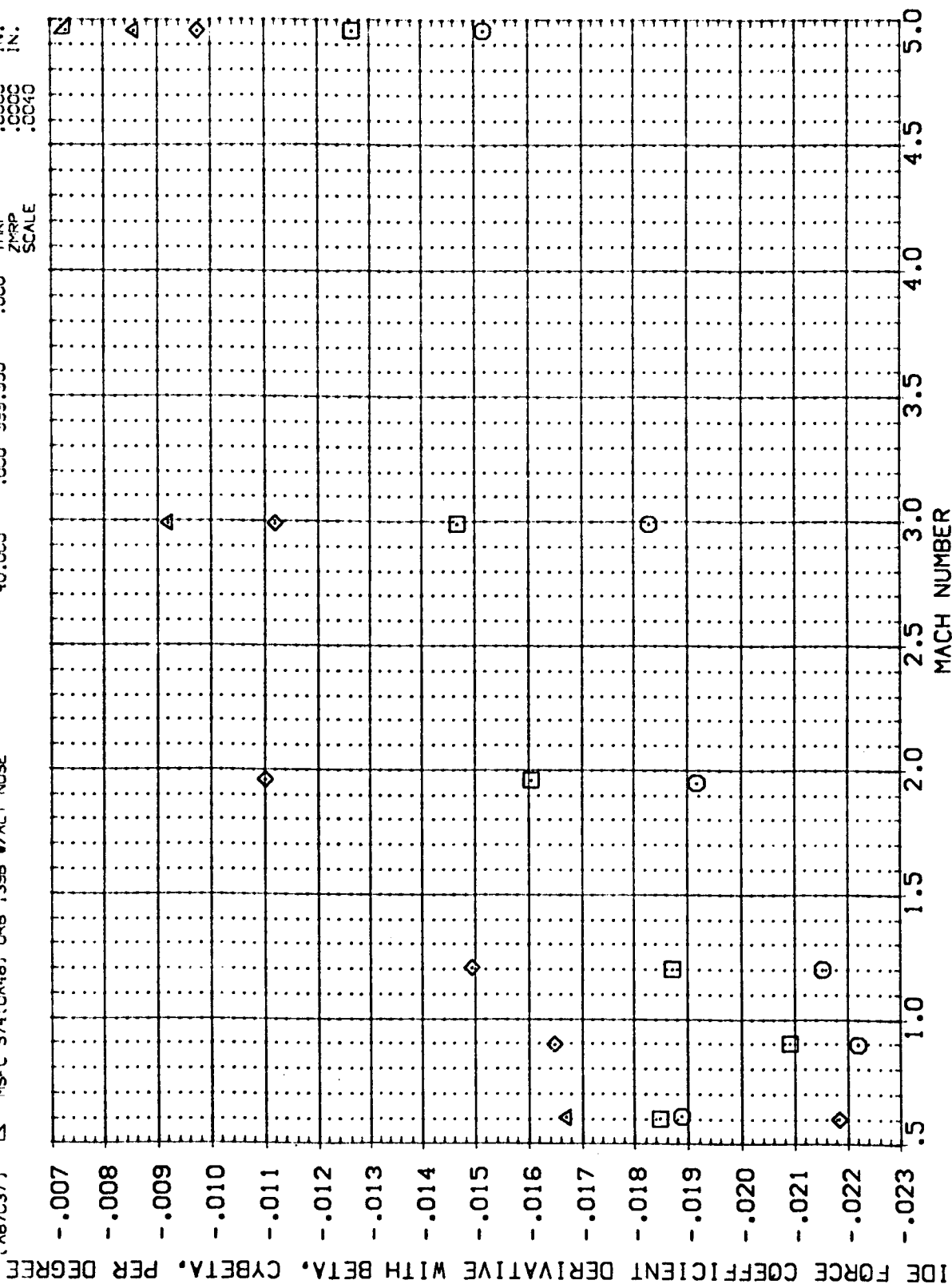


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA ELEVTR SPDRK BOFLAP REFERENCE INFORMATION SQ.FT.

(A87033)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000	N.
(A87034)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	10.000	.000	999.990	.000	LREF	474.8000	N.
(A87035)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	20.000	.000	999.990	.000	BREF	936.7000	N.
(A87036)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	30.000	.000	999.990	.000	YMRP	838.7000	N.
(A87037)	MSFC 574 (CA48) CRB 1398 W/ALT NOSE	40.000	.000	999.990	.000	ZMRP	.0000	N.

SCALE .0040

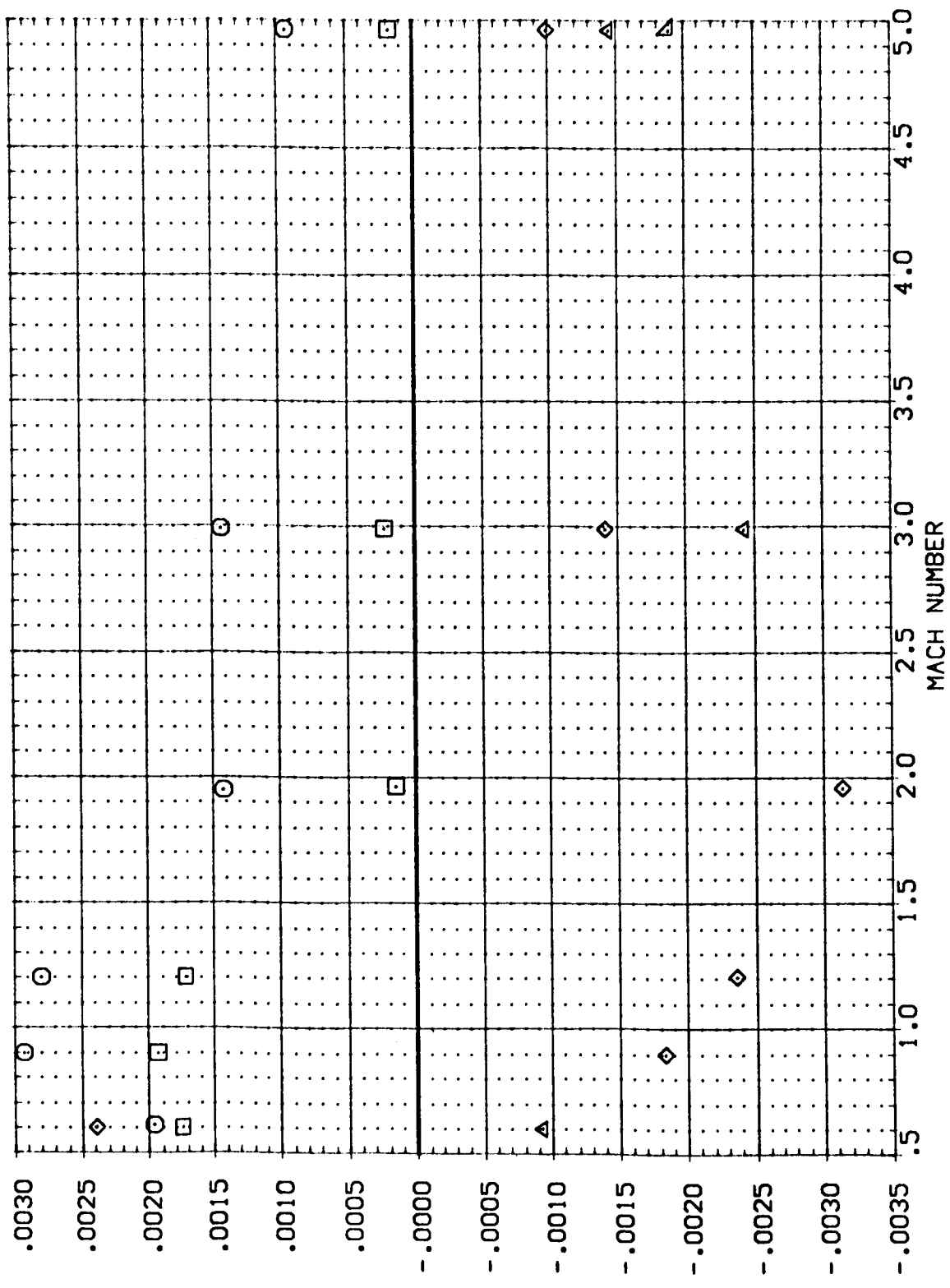


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(OA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(OA48) CRB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(OA48) CRB 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(OA48) CRB 139B W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	MSFC 574(OA48) CRB 139B W/ALT NOSE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

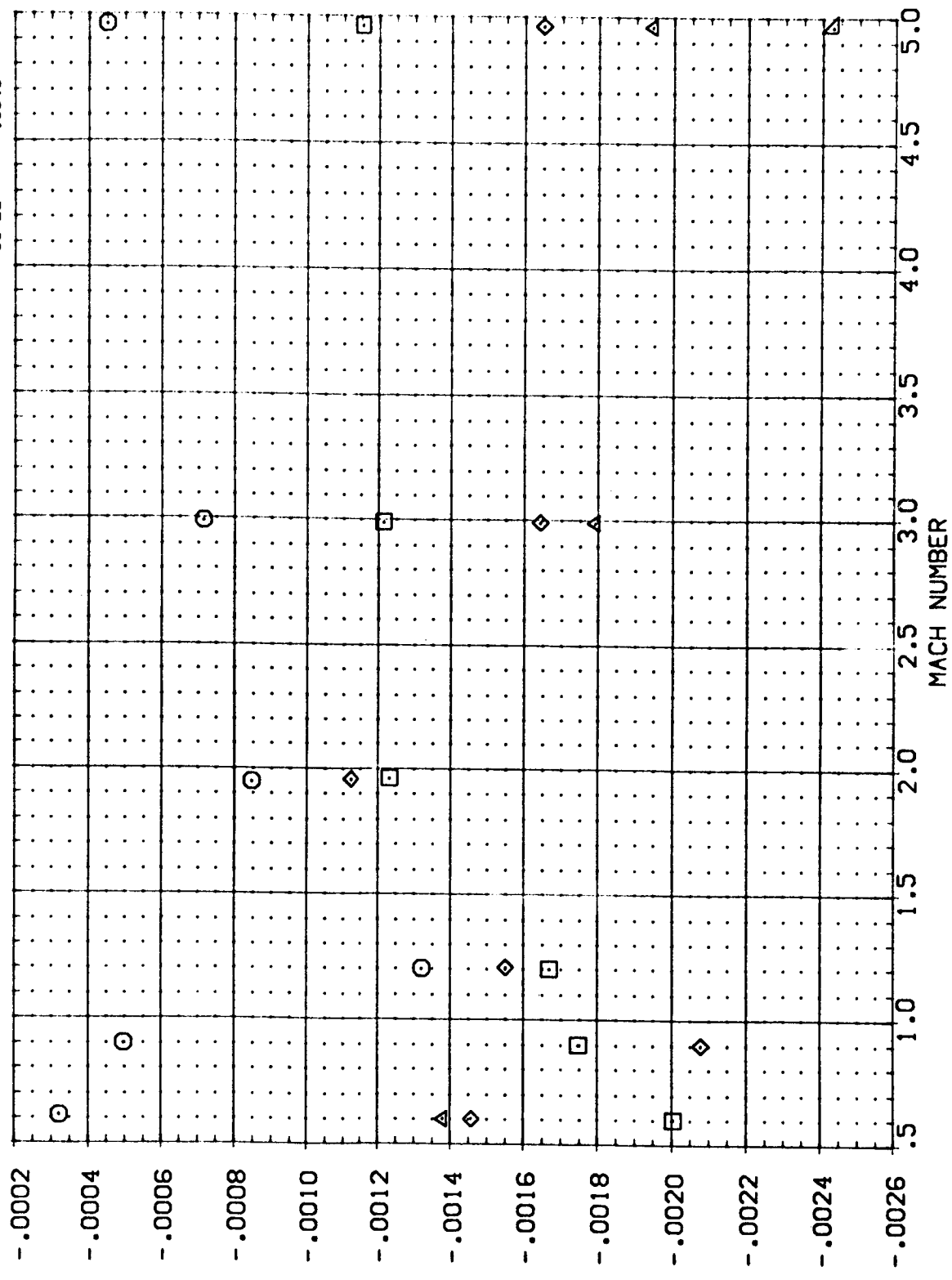


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

11/20/2022

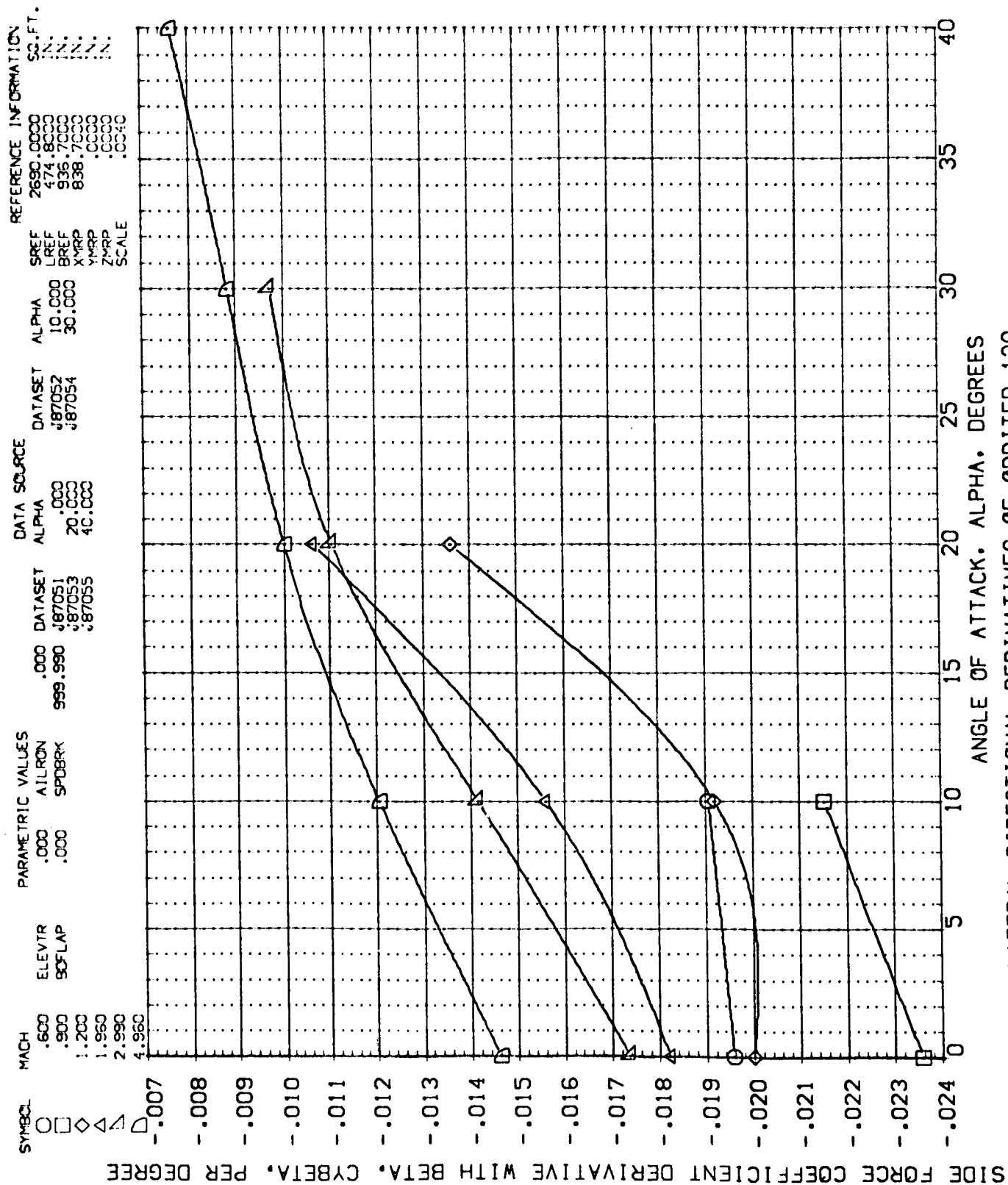


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

MSFC 574(0A48) ORB 139

(J87051)

REFERENCE INFORMATION
SQ.FT.
N.
N.
N.
N.
N.
N.

DATA SOURCE
ALPHA
J87052
J87054
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

PARAMETRIC VALUES
MACH
ELEVTR
BDFLAP
AILRON
SPDRK
J87051
J87053
J87055

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

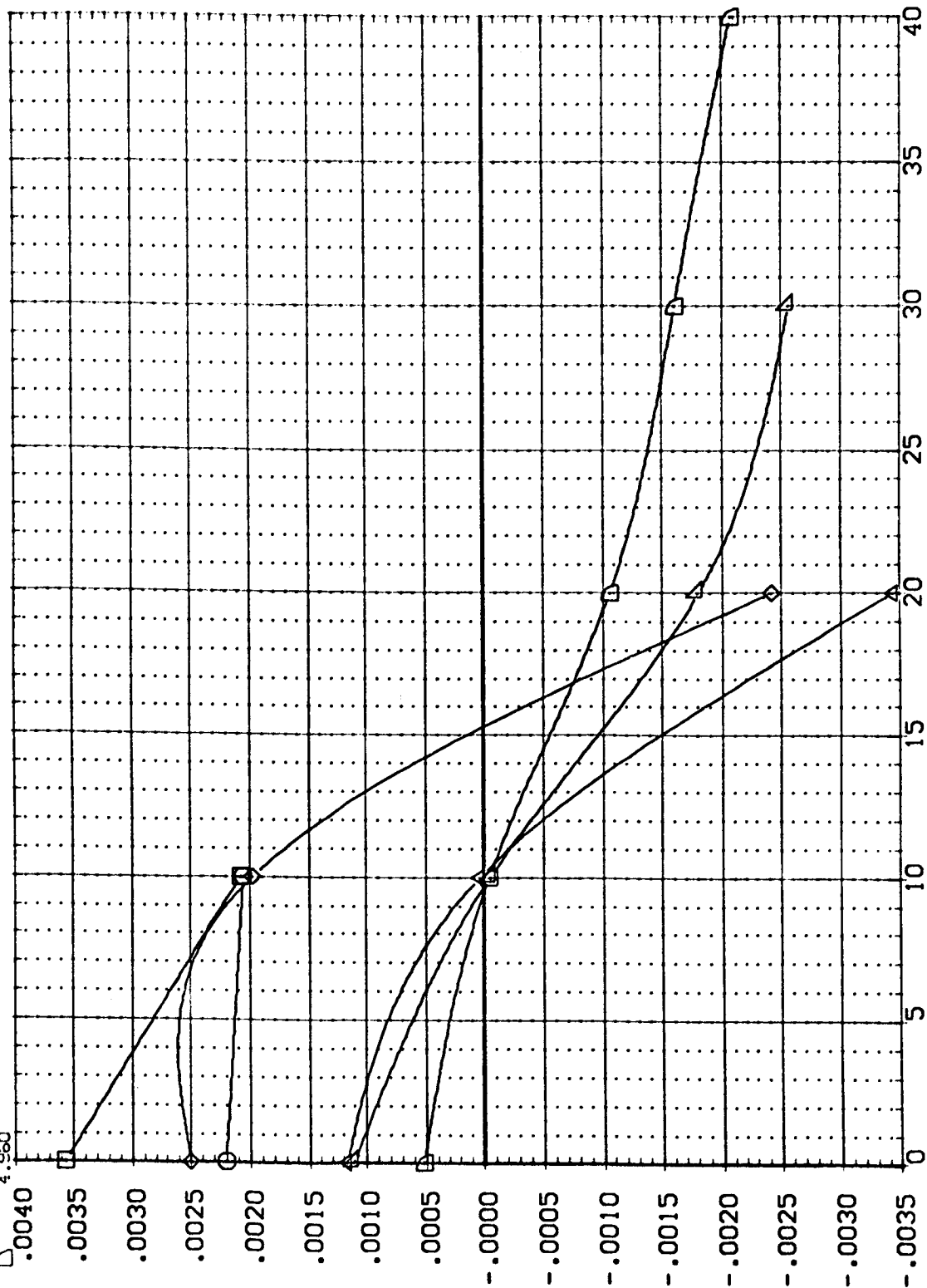


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

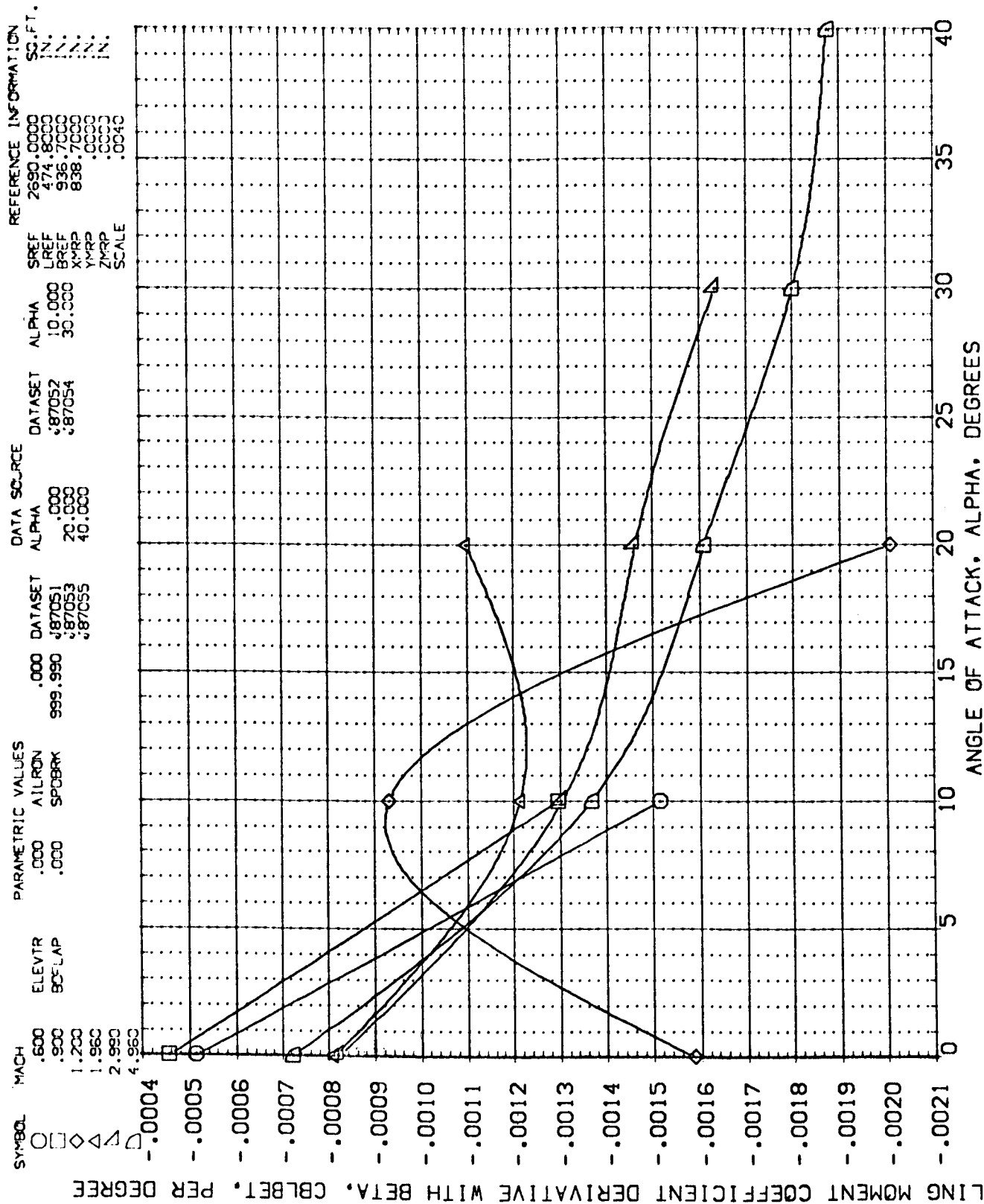


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSFC 574 (OA48) CRB 139
 (A87052) MSFC 574 (OA48) CRB 139
 (A87053) MSFC 574 (OA48) CRB 139
 (A87054) MSFC 574 (OA48) CRB 139
 (A87055) MSFC 574 (OA48) CRB 139

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 53.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

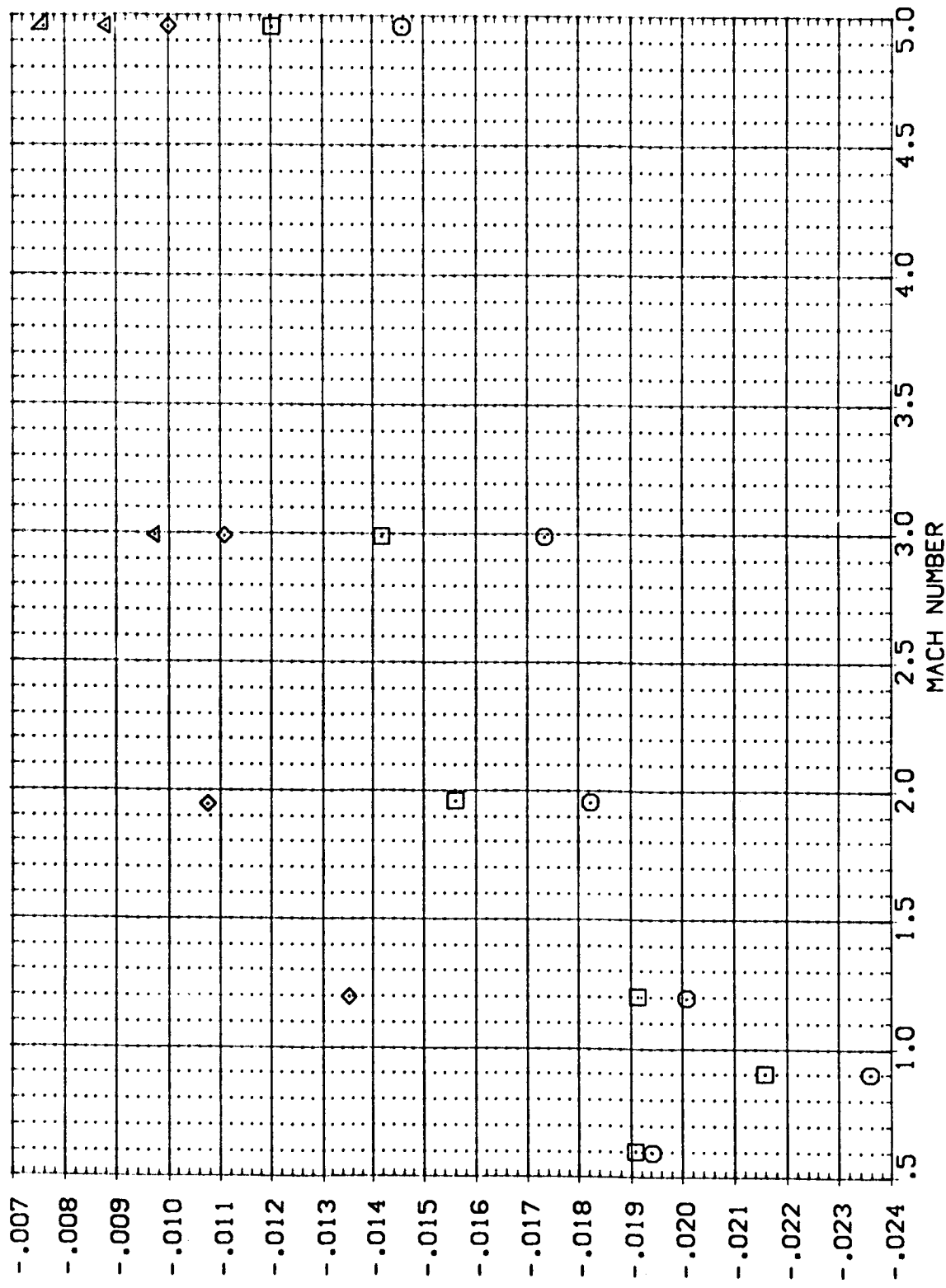


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

ALPHA	ELEVTR	SPDGRK	BOFLAP	REFERENCE	INFORMATION
.000	.000	999.990	.000	SREF	2690.0000
10.000	.000	999.990	.000	LREF	474.8000
20.000	.000	999.990	.000	BREF	936.7000
30.000	.000	999.990	.000	XREF	838.7000
40.000	.000	999.990	.000	YREF	.0000
	.000	999.990	.000	ZREF	.0000
				SCALE	.0040

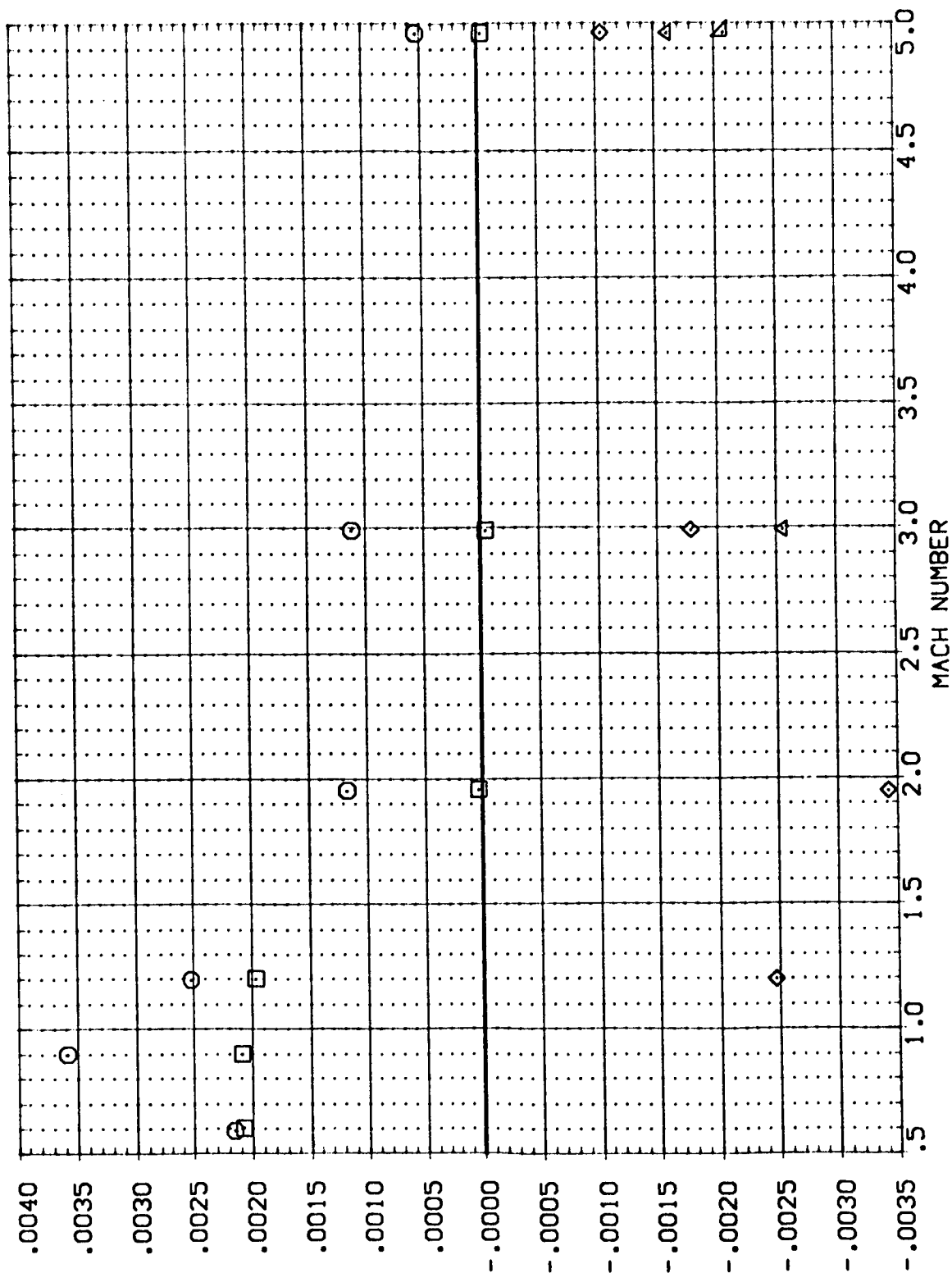


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(OA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000
(A87052)	MSFC 574(OA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000
(A87053)	MSFC 574(OA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000
(A87054)	MSFC 574(OA48) ORB 139	30.000	.000	999.990	.000	YMRP 838.7000
(A87055)	MSFC 574(OA48) ORB 139	40.000	.000	999.990	.000	ZMRP .0000
						SCALE .004C

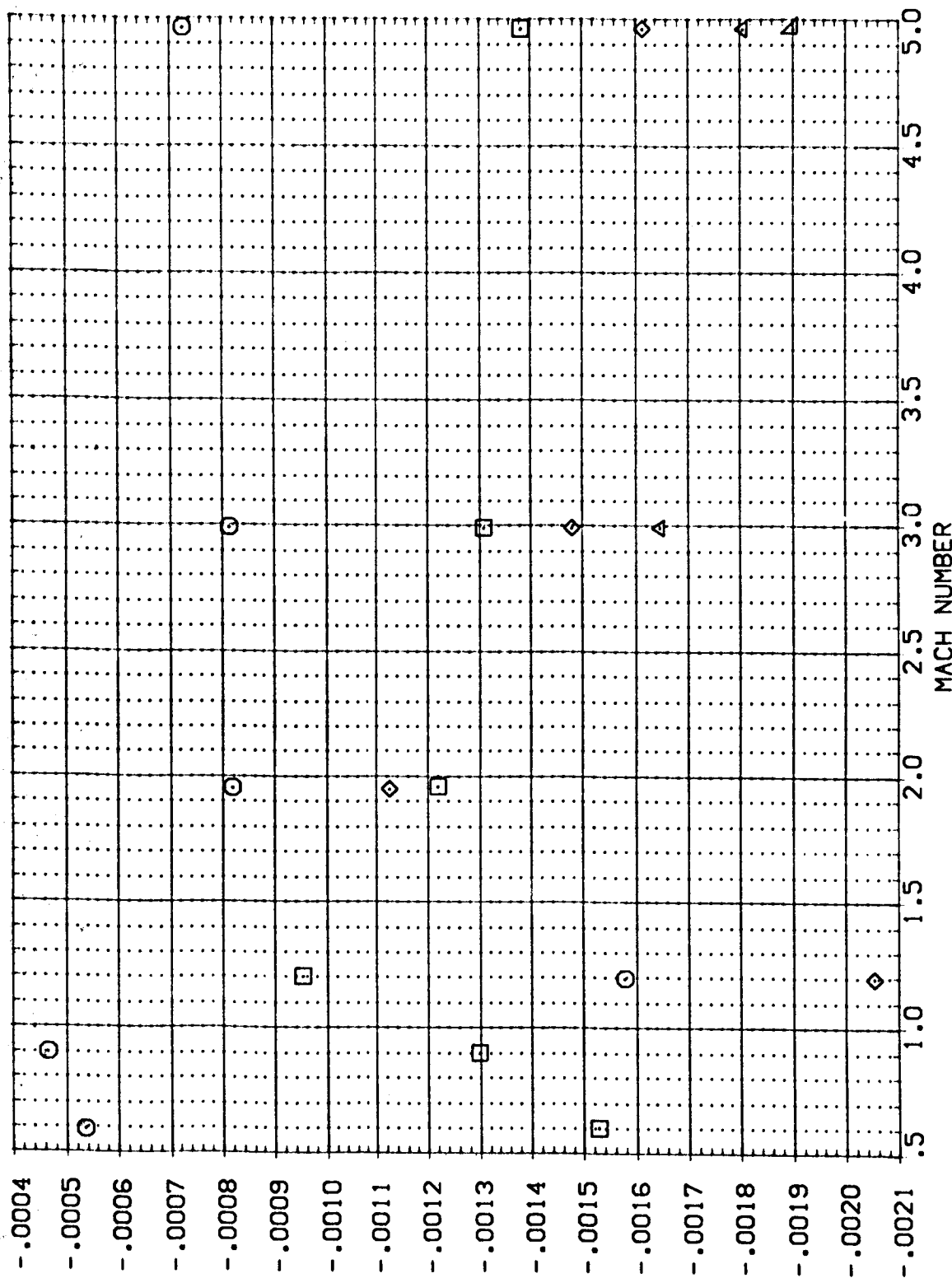


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

(J87068)

MSFC 574(0A48) ORB 139 W/ALT NOSE

SYMBOL	MACH	PARAMETRIC VALUES			DATA SOURCE	DATASET	ALPHA	SREF	REFERENCE INFORMATION		
		ELEVTR	AILRON	SPDRK					2690.0000	SG.F.T.	
○	1.960		.000		.000	J87068	10.000	REF	474.8000	N.	
□	2.990	BDCLAP	.000		999.990	J87070	30.000	BREF	936.7000	N.	
◇	4.960				40.000	J87072		XMRP	838.7000	N.	
								YMRP	.0000	N.	
								ZMRP	.0000	N.	
								SCALE	.0040		

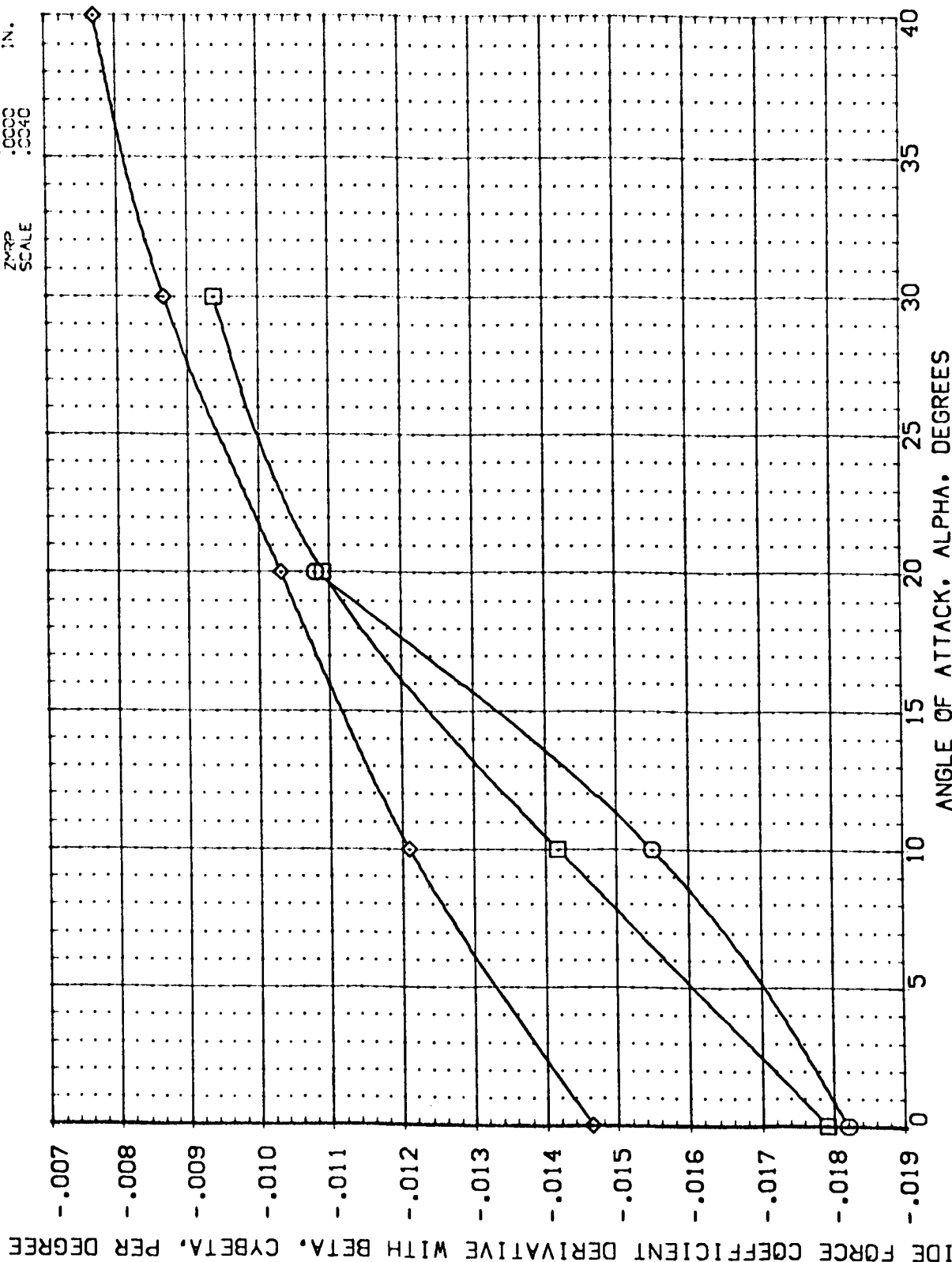


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

(J87068)

MSFC 574(0A48) ORB 139 W/ALT NOSE

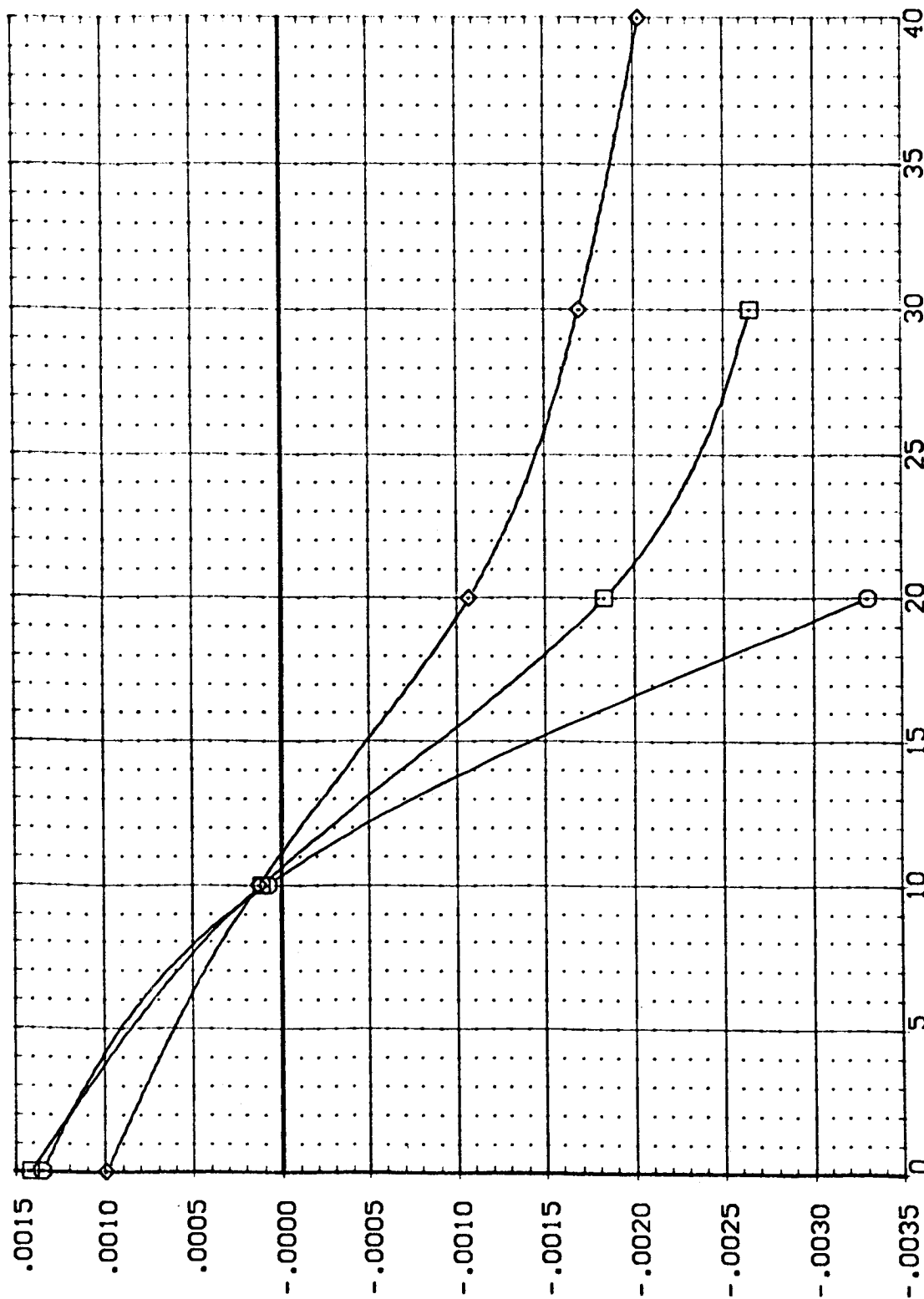
REFERENCE INFORMATION
SREF 2690.0000
LREF 474.8000
BREF 936.7000
XMRP 838.7000
YMRP .0000
ZMRP .0000
SCALE .0010

DATA SOURCE
ALPHA .000
J87069
J87071
J87072

PARAMETRIC VALUES
MACH 1.960
ELEVTR .000
BDFLAP .000
SPOBRK .000
AILRON .000

SYMBOL
□
◇
○

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

SYMBOL	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
		ELEVTR	AILRON	SPORBK	.000	DATASET	ALPHA	SREF	2690.0000	SC.FT.
○	1.960	BOFLAP	.000	.000	999.990	J87058	10.000	LREF	474.8000	N.
□	2.990		.000			J87069	30.000	BREF	936.7000	N.
◇	4.960					J87072		XMRP	838.7000	N.
								YMRP	.0000	N.
								ZMRP	.0000	N.
								SCALE	.0040	

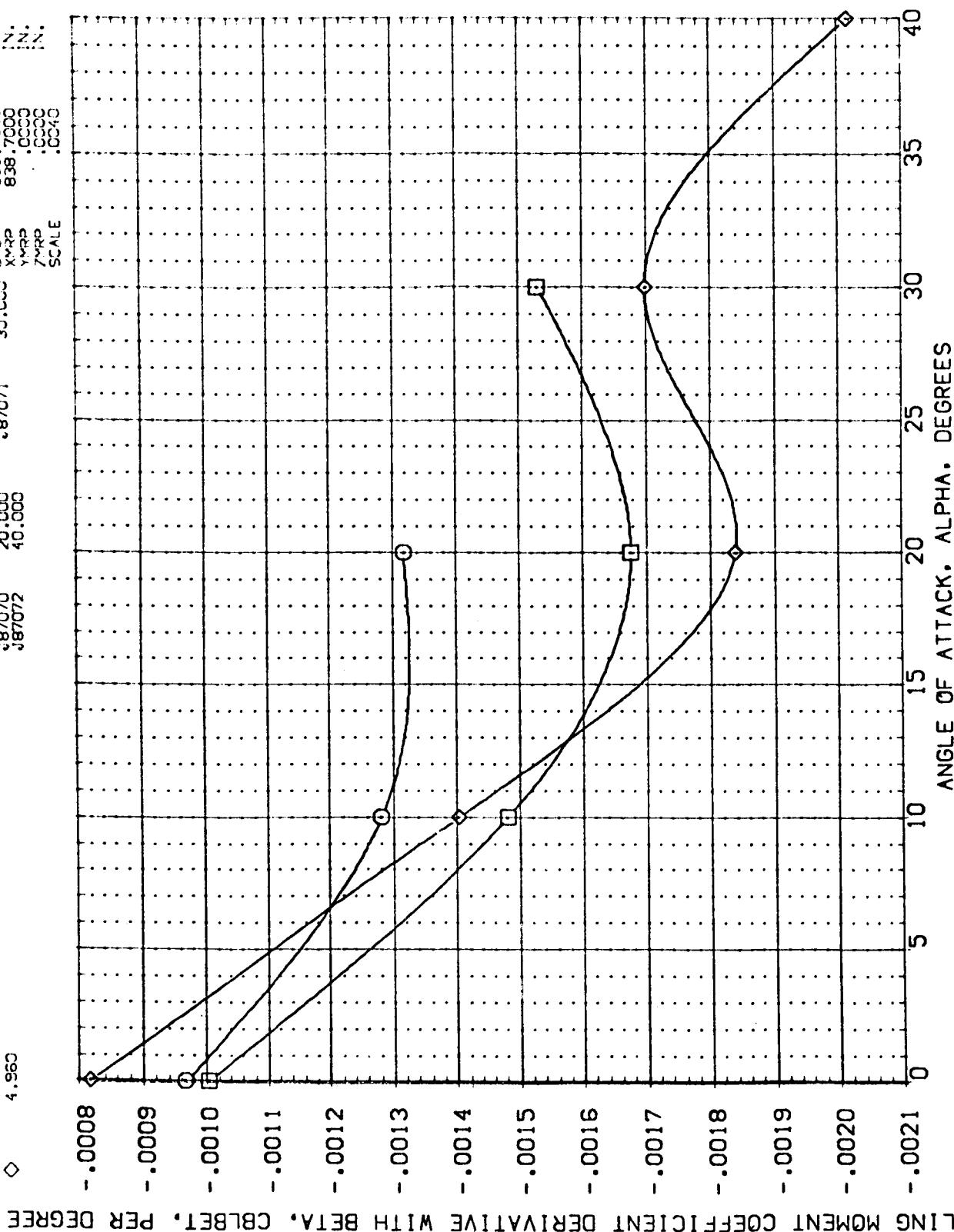


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

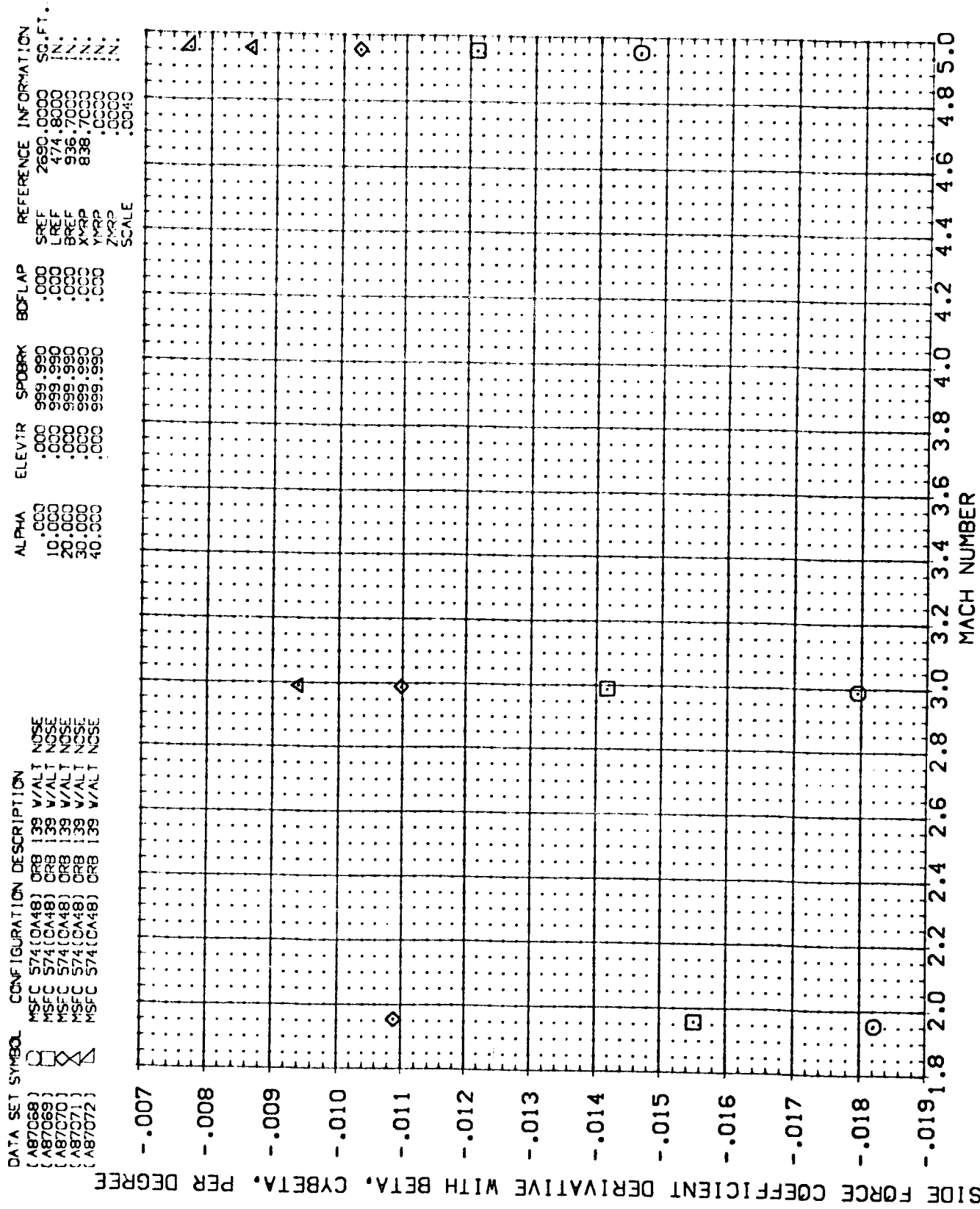


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(DA48) CRB 139 V/WAL T NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87069)	MSFC 574(DA48) CRB 139 V/WAL T NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87070)	MSFC 574(DA48) CRB 139 V/WAL T NOSE	20.000	.000	999.990	.000	BREF 9367.0000
(A87071)	MSFC 574(DA48) CRB 139 V/WAL T NOSE	30.000	.000	999.990	.000	XMRP 838.7000
(A87072)	MSFC 574(DA48) CRB 139 V/WAL T NOSE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

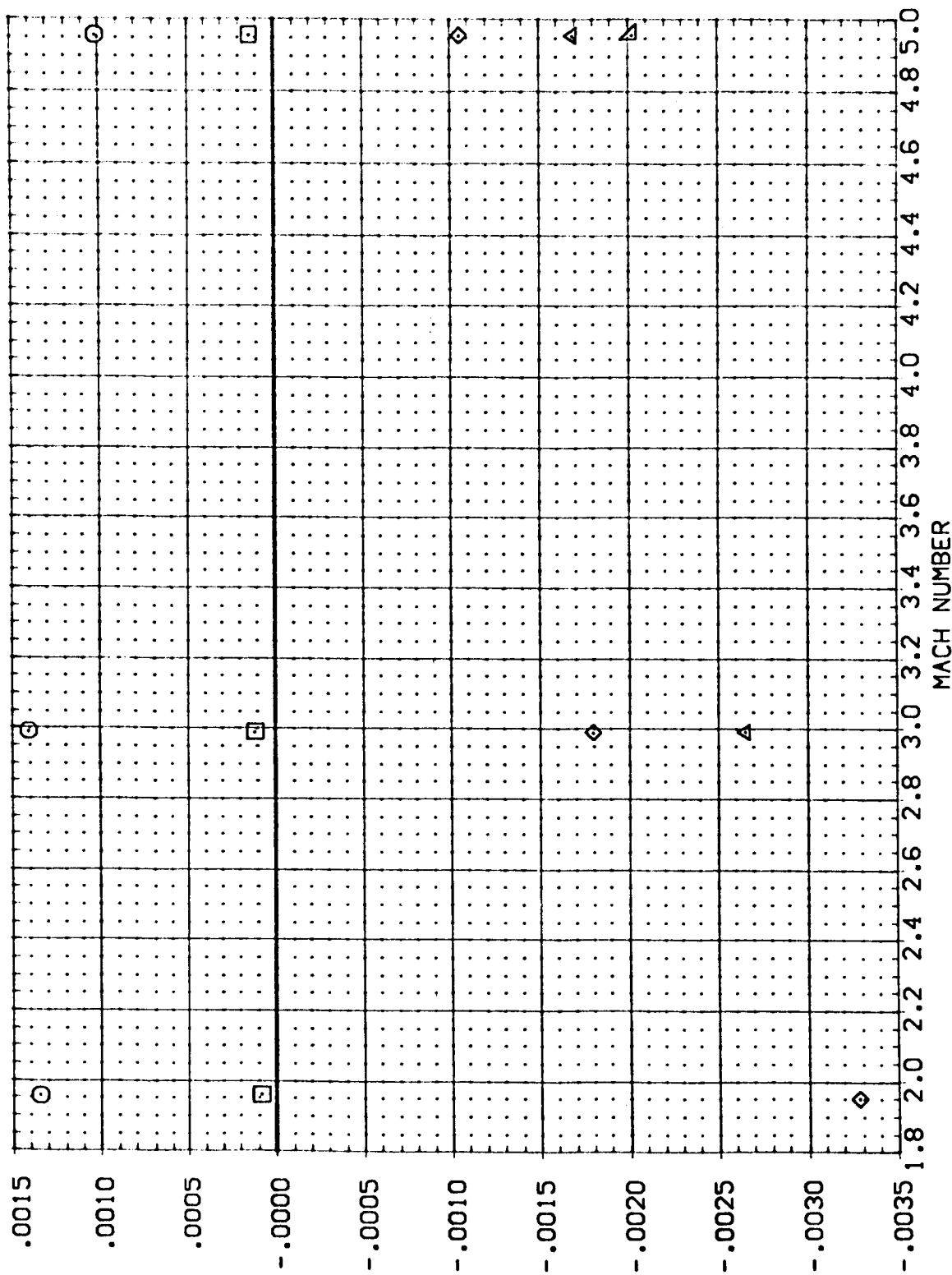


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(OA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) CRB 139 V/ALT NOSE	30.000	.000	999.990	.000	XREF 838.7000 IN.
(A87072)	MSFC 574(OA48) CRB 139 V/ALT NOSE	40.000	.000	999.990	.000	YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

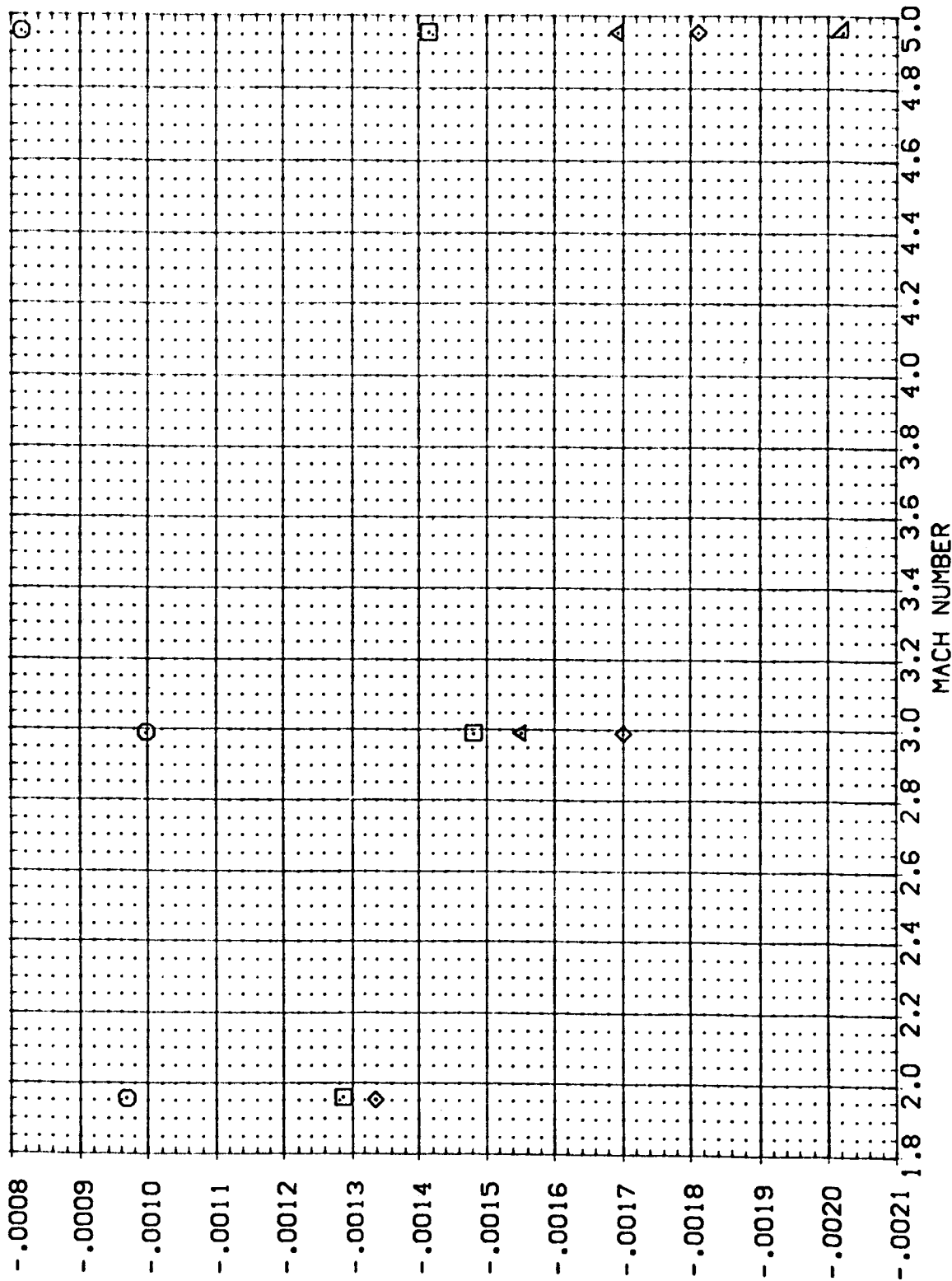


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
[A87011]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	SREF 2690.0000
[A87087]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	LREF 474.8000
[A87090]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	BREF 936.7000
[A87095]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	XMRP 838.7000
[A87095]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	YMRP .0000
[A87138]	MSFC 574(CA48) CRB 1398	10.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040
						SG.FT. N.

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

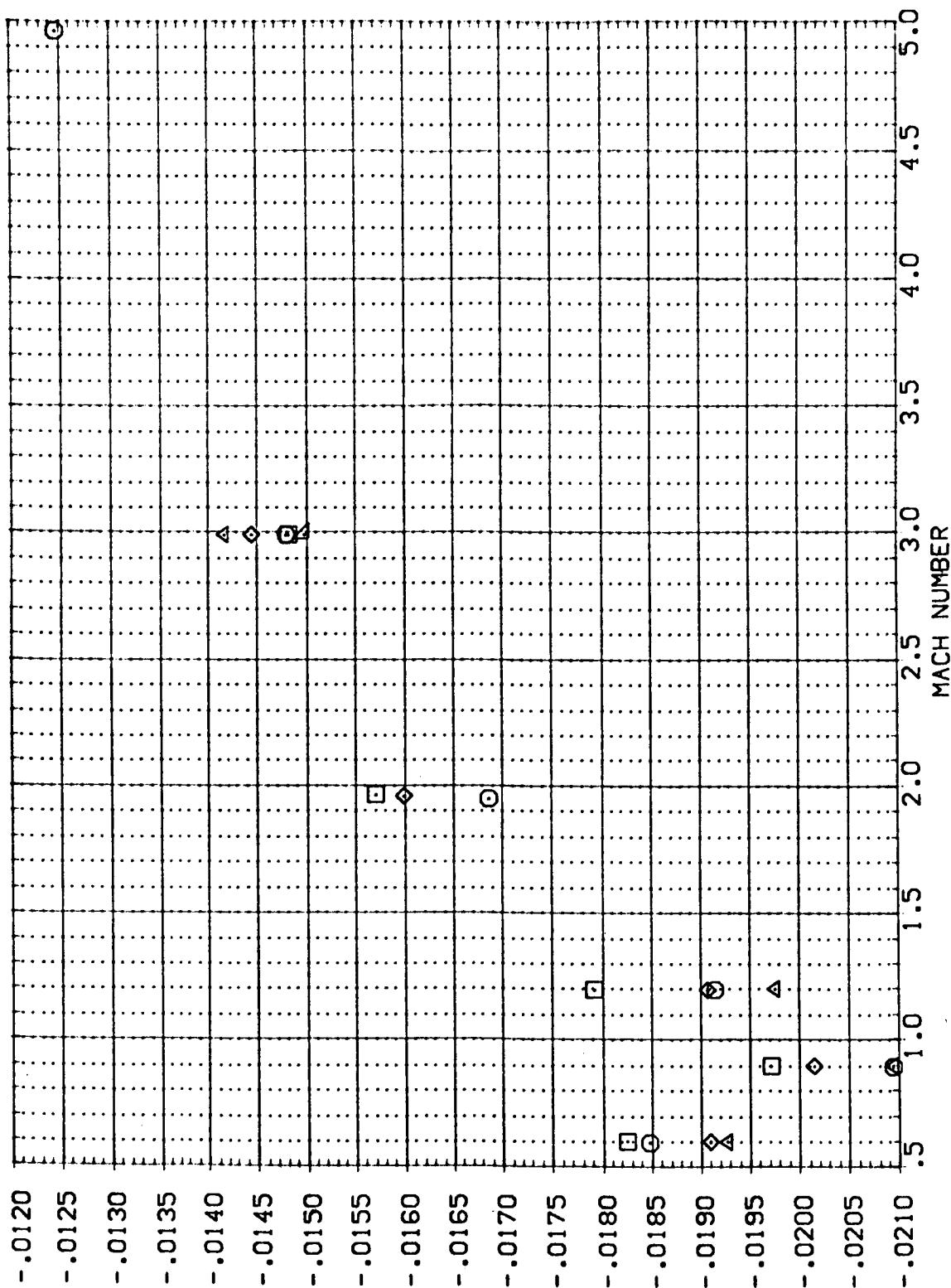


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87011) MSFC 574(OA48) ORB 139B

(A87087) MSFC 574(OA48) ORB 139B V/H19

(A87090) MSFC 574(OA48) ORB 139B V/H20

(A87095) MSFC 574(OA48) ORB 139B V/H23

(A87108) MSFC 574(OA48) ORB 139B V/H22

ALPHA 10.000
10.000
10.000
10.000
10.000

ELEVTR .000
.000
.000
.000
.000

SPOBRK 999.990
999.990
999.990
999.990
999.990

BOFLAP .000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XVRP 838.7000 IN.
YVRP .0000 IN.
ZVRP .0000 IN.
SCALE .0040

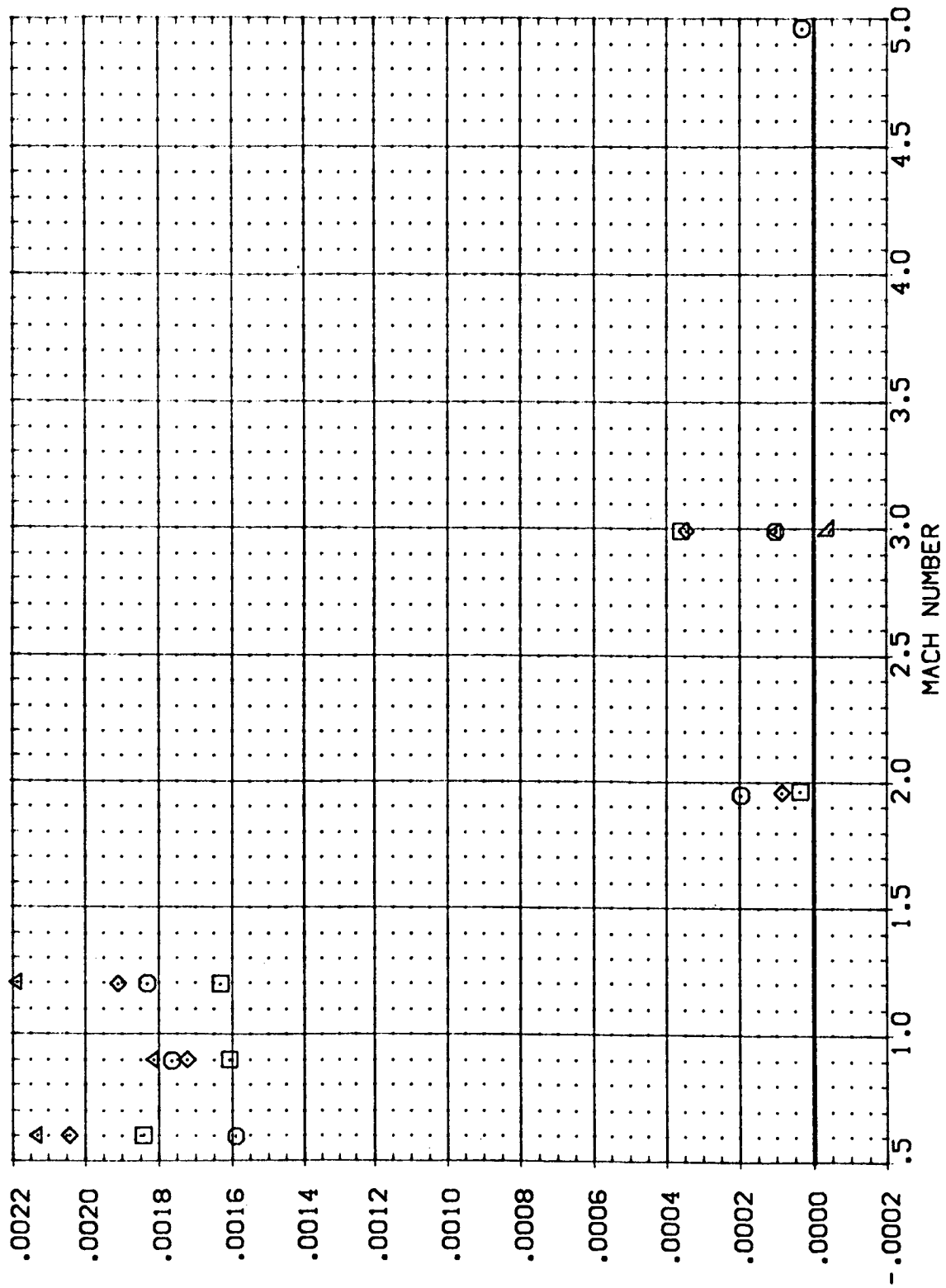


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER

REFERENCE INFORMATION		SG.FT.
SREF	2690.0000	N.
LREF	474.8000	N.
BREF	936.7000	N.
XMRP	838.7000	N.
YMRP	.0000	N.
ZMRP	.0000	N.
SCALE	.0040	

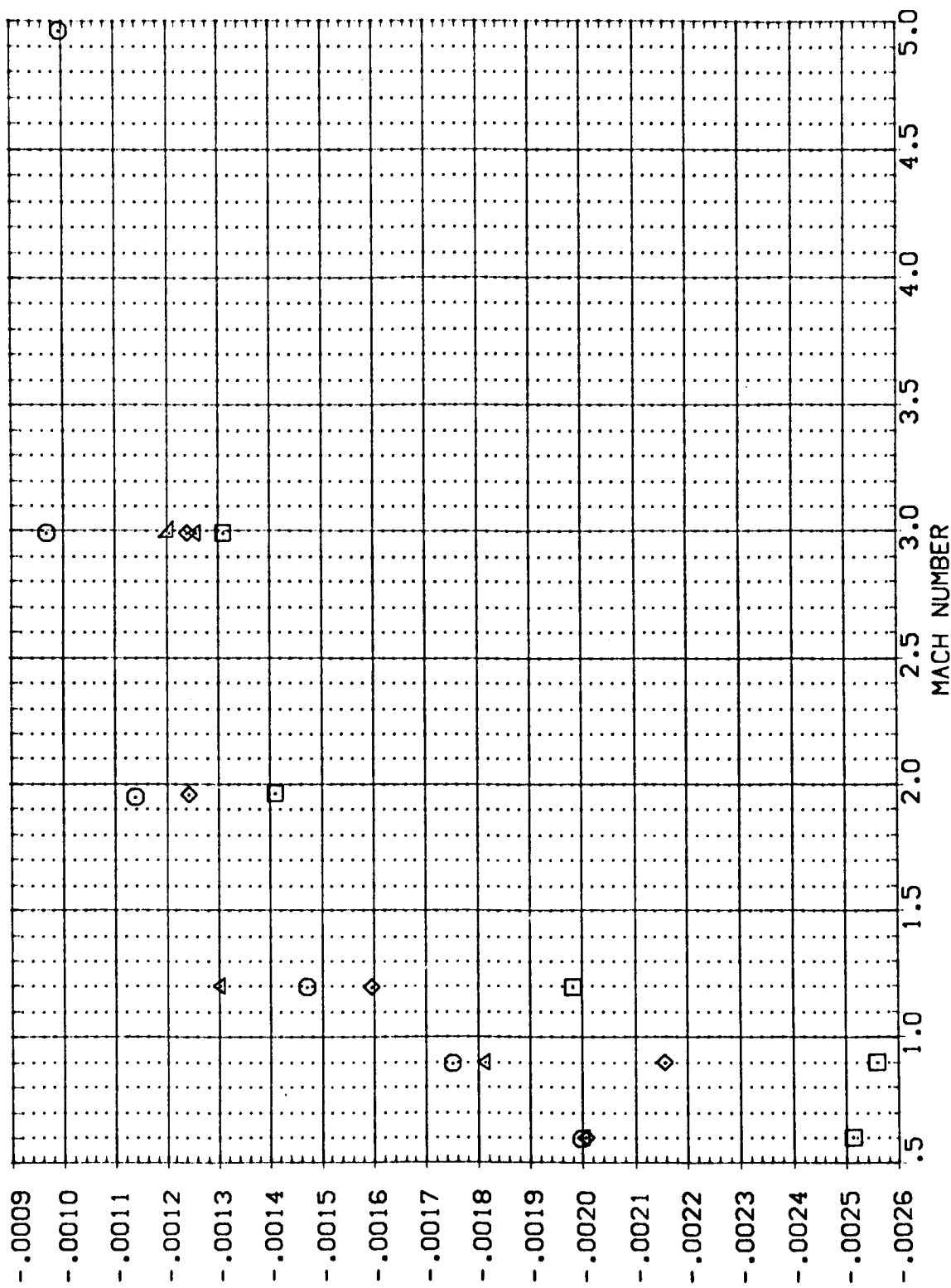


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER